Memorandum

To: Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, New York 10504

From: William A. Canavan, PG, LSRP
HydroEnvironmental Solutions, Inc.
One Deans Bridge Road
Somers, New York 10589

Date: June 10, 2022

Re: Oamic Ingredients LLC
6 Labriola Court
Armonk, New York

HydroEnvironmental Solutions, Inc. (HES) was retained by the Town of North Castle, Westchester County, New York to review the Oamic Ingredients LLC (Oamic) recent Application for the proposed additional storage of food chemical and flavoring compounds at the existing warehouse storage facility located at 6 Labriola Court in Armonk, New York. As part of our review process, HES reviewed the following documents provided by the Town and the Applicant:

1. A March 14, 2022 cover letter compiled by JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC (JMC).
2. A November 22, 2021, New Product Introduction Letter compiled by Midwest Safety, LLC (MS).

Based on our review of the materials provided and our recent site visit on May 24, 2022, with the Town Planner and the Applicant's consultant (JMC) we offer the following:

Project Background

The Applicant renovated an existing 24,000 (approximately) square foot warehouse building for the purposes of storing chemical compounds related to food flavoring and preservation. Initially, the Applicant proposed using the facility to store Class I, II and III chemical compounds (according to the International Code Council [ICC] Fire Code Classification) and submitted a site plan and drawings to

accommodate this proposal in May and October 2017. However, after appearing before the Town of North Castle Planning and Conservation Boards and corresponding with the New York City Department of Environmental Protection (NYCDEP), the Applicant changed their proposal to only store Class IIIA and Class IIIB combustible liquids and flammable and non-flammable solids.

The site is located immediately adjacent to Bear Gutter Creek and a pond and wetland that are part of the creek watershed. Bear Gutter Creek is a direct tributary to Kensico Reservoir; therefore, the Town of North Castle and the NYCDEP expressed concerns over the storage of bulk chemicals in very close proximity to an environmentally sensitive watershed. Additionally, the Town of North Castle expressed concerns over the proximity of the facility to sensitive receptors such as restaurants and residential properties, and recently the North Castle Fire Department has expressed concerns over stored chemicals with respect to a fire and fire-fighting. The site location is shown on **Figure 1**. Photographs from the May 24, 2022, site visit are included on **Figure 2**.

The list of new chemicals that are proposed for bulk storage at the facility are listed on the attached MS report along with all pertinent data and Safety Data Sheets (SDS).

Based on our review of the latest MS report and our May 24, 2022 site visit, HES believes that the proposed additional compounds will be stored in accordance with all OSHA and local fire codes and will not pose a threat to the human health or the surrounding environment. The field visit indicated that the additional compounds will be stored in a separate area that was recently constructed, as outlined in the attached MS report. HES confirmed the construction of this new storage area, and that the facility was well maintained and operating in accordance with all pertinent local, state and federal rules and regulations where applicable.

HES would be pleased to meet with the Town and/or the Applicant to discuss this project in further detail should the need arise. Please contact us at (914) 276-2560 with any questions or should you require any additional information pertaining to this matter.

Figure 1

Site Location Map

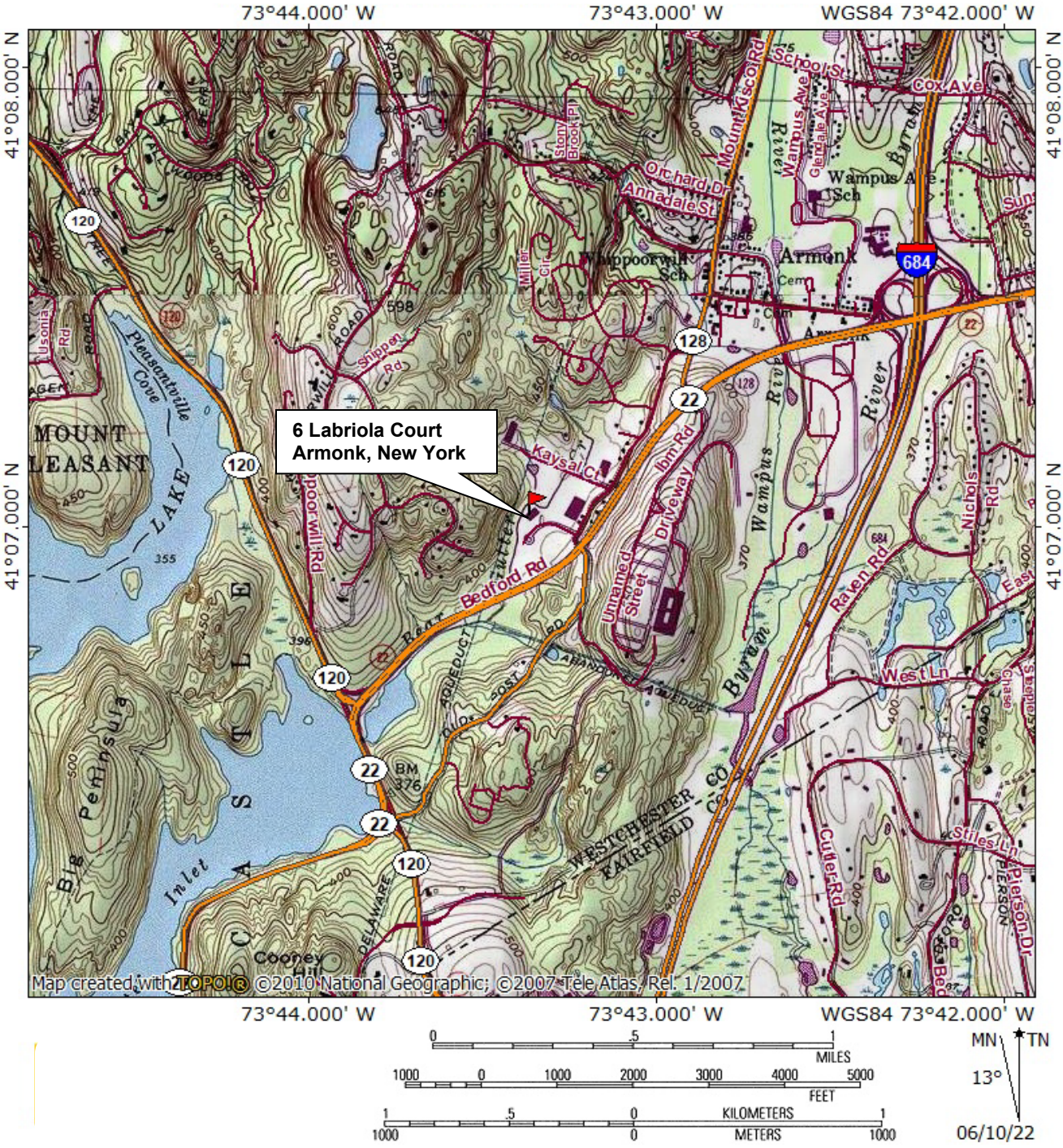
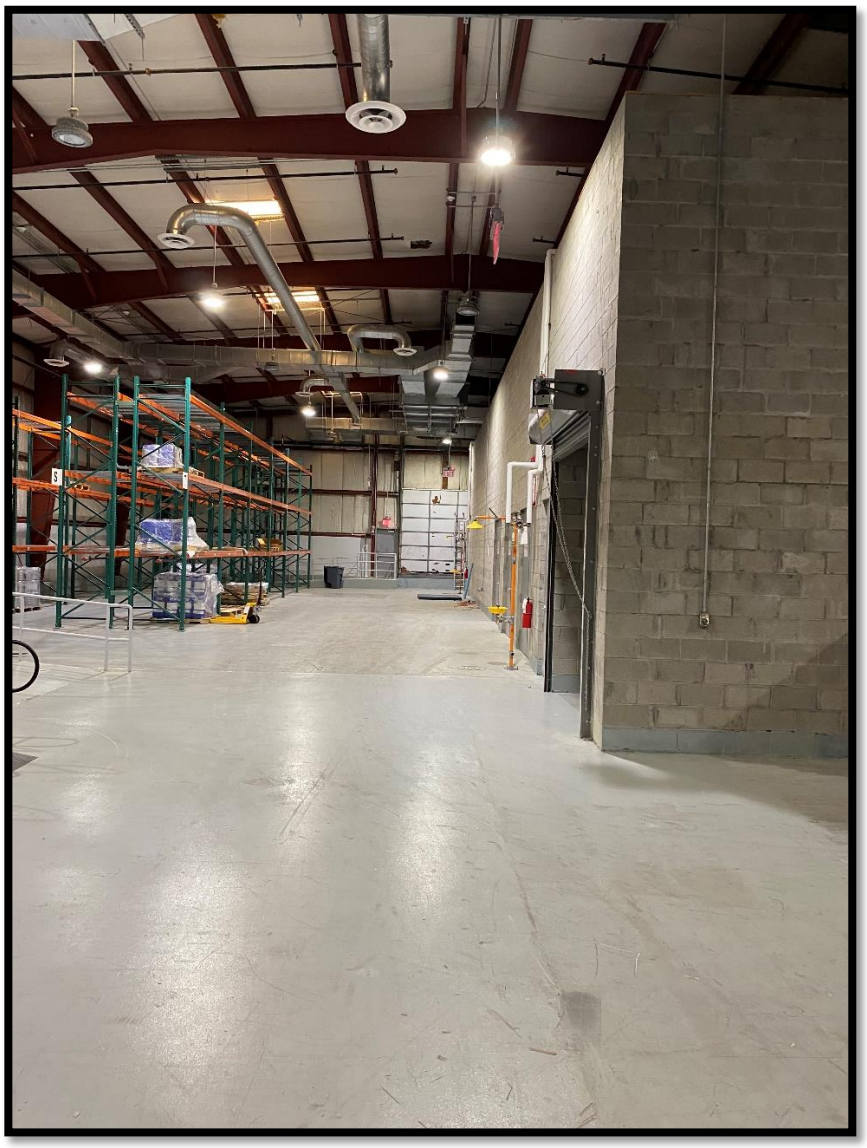


FIGURE 2 – PHOTO LOG

OAMIC INGREDIENTS, INC.
6 LABRIOLA COURT
ARMONK, NEW YORK



Photograph of warehouse interior showing good housekeeping.

Photographs taken during site visit activities on May 24, 2022.
HydroEnvironmental Solutions, Inc., One Deans Bridge Road, Somers, New York 10589

FIGURE 2 – PHOTO LOG

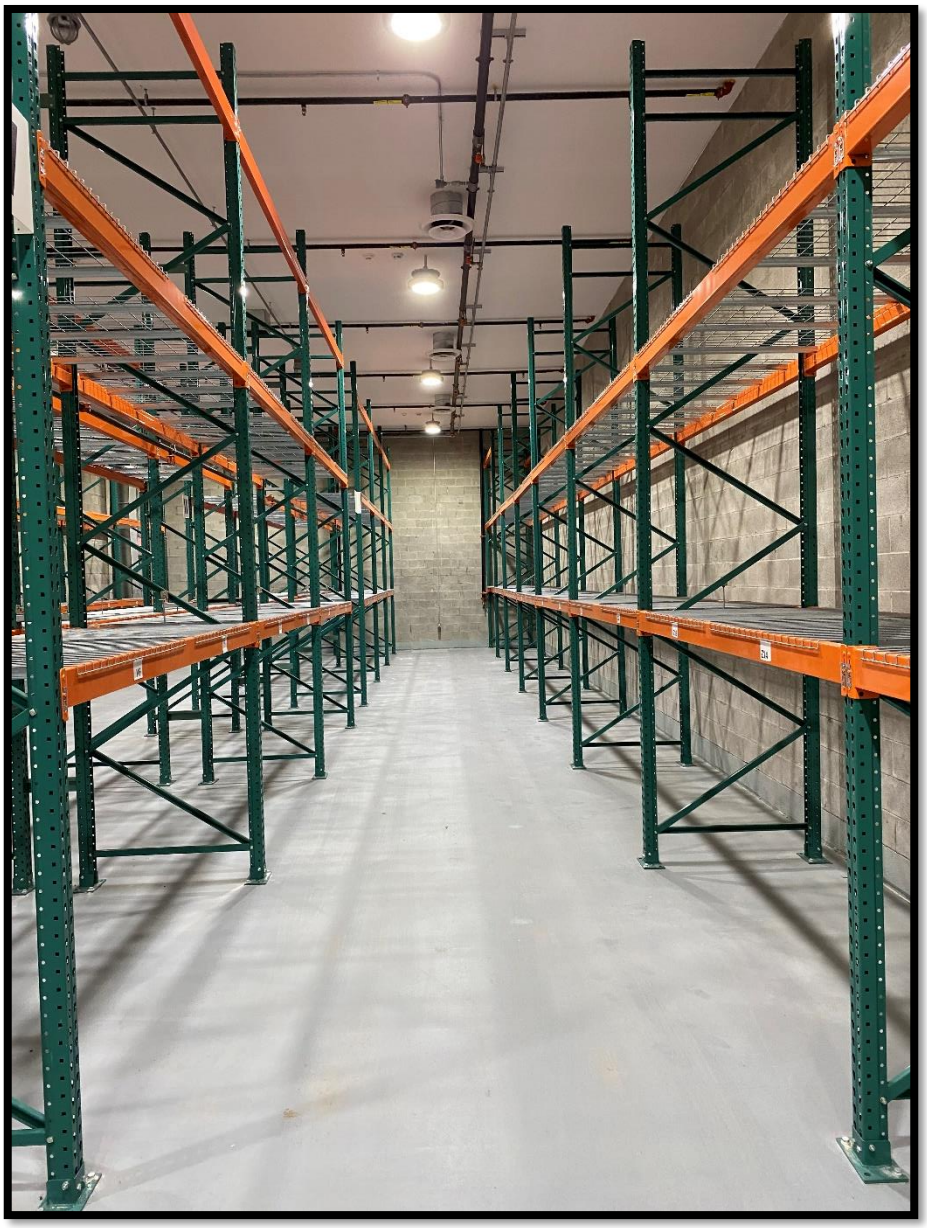
OAMIC INGREDIENTS, INC.
6 LABRIOLA COURT
ARMONK, NEW YORK

Photograph of interior of warehouse showing shelf storage area for compounds.

Photographs taken during site visit activities on May 24, 2022.
HydroEnvironmental Solutions, Inc., One Deans Bridge Road, Somers, New York 10589

FIGURE 2 – PHOTO LOG

OAMIC INGREDIENTS, INC.
6 LABRIOLA COURT
ARMONK, NEW YORK



Photograph of recently constructed proposed storage area
for additional chemical compounds.

Photographs taken during site visit activities on May 24, 2022.
HydroEnvironmental Solutions, Inc., One Deans Bridge Road, Somers, New York 10589

Site Planning
Civil Engineering
Landscape Architecture
Land Surveying
Transportation Engineering
Environmental Studies
Entitlements
Construction Services
3D Visualization
Laser Scanning

March 14, 2022

Adam R. Kaufman, AICP
Director of Planning
Town of North Castle
17 Bedford Road
Armonk, NY 10504

RE: JMC Project 17101
Oamic Ingredients Warehouse
6 Labriola Court
Town of North Castle, New York

Dear Mr. Kaufman:

As discussed with the Planning Board during their January 10th meeting, Oamic Ingredients is proposing to amend its product storage list and add several new ingredients. Oamic Ingredients previously retained Midwest Chemical Safety, LLC to review the proposed ingredient list with regard to code compliance and safety. This report was submitted to the Planning Board in December, and concluded that the new ingredients are permitted to be stored by all applicable building codes.

Subsequently, and based on discussions with the Town Planning Department, we were asked to submit additional information / data about the proposed ingredients for review by the Planning Board's Environmental Consultant, HydroEnvironmental Solutions, and the Building Department's code compliance consultant, FCS Consultants. It is our understanding that the purpose of this review is to confirm the conclusions previously made by Midwest Chemical Safety. Oamic would like to reiterate that there is no mixing or manufacturing conducted at the facility and the storage of all ingredients is, and will continue to be, conducted in accordance with applicable building codes.

Accordingly, we are pleased to provide the following materials for review by the Town's consultants:

1. Code Compliance and Safety Analysis, prepared by Midwest Chemical Safety, LLC, dated 11/22/2021.

2. Combined Ingredient List, prepared by Oamic Ingredients, dated 02/28/2022.

3. Safety Data Sheets for All Ingredients, compiled by Oamic Ingredients, dated 03/03/2022.

We trust that this information is sufficient for you to continue your review of this Application and look forward to discussing this matter with you further. If you have any questions or require

additional information with regard to the information provided above, please do not hesitate to contact our office at 914-273-5225. Thank you for your consideration.

Sincerely,

JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC

Paul J. Dumont

Paul J. Dumont, PE
Design Manager

CC: Anthony Veneziano, via email
Steven Gu, via email

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Midwest Chemical Safety, LLC

Harry J. Elston, Ph.D., CIH, PMP – Principal

Mr. Anthony Veneziano
Attorney at Law
84 Business Park Drive, Suite 200
Armonk, NY 10504

22 Nov 2021

New Product Introduction – Executive Summary

OAMIC USA proposes to increase the inventory *variety* at its Armonk warehouse facility. Unlike the previous (July 2021) increase, however, OAMIC proposes adding chemicals that present a higher flammability hazard than its current inventory. The proposed additions are primarily alcohol- and aldehyde-based products. The *quantity* of the products stored at the OAMIC facility, however, remain limited due to the design characteristics of the building.

While the flammability *hazard* increases due to the alcohol-containing chemicals, the *risk* of this proposal to the warehouse, its workers, and the community, however, is sufficiently mitigated by building design as well as engineering and administrative controls to present an acceptable risk profile to the community. These controls include but are not limited to:

- Products at the warehouse arrived in small quantity, sealed, Department of Transportation-approved shipping containers and are not opened during routine operation. Likewise, the warehouse was constructed to minimize the potential for ignition sources. The probability of an inadvertent ignition is minimal.
- Automatic fire suppression system throughout the warehouse area.
- Additional state-of-the-art fire suppression where flammable liquids will be stored before distribution.
- Interior berm to contain all fire suppression water *plus* the entire proposed inventory quantity.
- OAMIC's operational procedures are such that they do not open any container – they simply re-distribute containers to clients.

A hazard and risk analysis of the new inventory is provided on the following pages. The proposed increase in product variety presents an acceptable risk profile to the community and its emergency responders. Midwest Chemical Safety recommends approval of OAMIC's increased operations.

9380 Wandering Trails Ln, Dawson, IL 62520 **217.971.6047 (O)**
helston@midwestchemsafety.com **www.midwestchemsafety.com**

Introduction

In 2018, Midwest Chemical Safety, LLC (MCS) was retained by Oamic USA (formerly Oamic Ingredients, Oamic) to provide expert insight on a proposed flavoring and scent chemical storage and distribution facility in Armonk, NY. The initial commentary in 2018 reviewed approximately twenty-five initial chemicals. As the facility became operational in 2021, a second analysis was performed on an increased inventory (2 July 2021). As Oamic desires to move to fully operational function, Oamic continues to retain MCS to provide insight and commentary regarding fire safety, toxicity, and potential environmental impact to a proposed increase in the variety of the inventory.

Oamic is engaged in warehousing and distribution of flavoring and scenting chemicals. That is their core and only business. Oamic is not engaged in any manufacturing process. Products are received from overseas import in United States Department of Transportation approved shipping containers and are distributed in those same containers: Oamic does not open containers to sub-divide packaged material that it receives from its suppliers for distribution.

The warehouse and distribution facility located in Armonk is purpose-built for Oamic's operation and contains several aspects of "Inherently Safe Design" that is not normally found in the warehousing industry. These safety features which were engineered into the construction of the facility play a vital role in overall risk mitigation of Oamic's operations and will be discussed in detail in the "Risk Assessment" section of this commentary.

As Oamic becomes fully operational, hazards of the chemicals stored in and distributed from the facility will increase, particularly the hazard associated with flammability. Since opening, Oamic has incrementally approached full operation to ensure that its internal processes and procedures provide the highest level of worker safety and safety to the Armonk community and the environment.

"Full operation" in the context of Oamic's operation necessitates the inclusion of chemicals whose flammability profile is greater than NFPA/IBC Class III or GHS Category 4 flammable liquids. While this introduces a higher *hazard* in Oamic's operation, the associated *risk* to the workers and community is minimally increased due to a combination of facility design and work practices. The layers of protection already in place at the facility should give Armonk confidence in Oamic's ability to properly conduct business in the community.

With respect to flammability hazards, there are distinct differences between the National Fire Protection Association (NFPA) or International Building Code (IBC) classification (common among code officials) and OSHA "Globally Harmonized" (GHS) Classification with which the reader may be familiar, and the two systems can be confusing. The table below summarizes the definitions and the differences of the two systems:

Table 1: Comparison between NFPA/IBC and GHS flammable liquid definitions

Flash/Boiling Point (°F)	NFPA/IBC	GHS	GHS Signal Word and Hazard Statement
Flash point < 73 °F, Boiling Point < 100 °F [< 95°F, GHS]	Class IA	Flammable Liquid, **Category 1**	Danger; Extremely flammable liquid and vapor
Flash point < 73 °F, Boiling Point > 100 °F [>95°F, GHS]	Class IB	Flammable Liquid, **Category 2**	Danger; Highly flammable liquid and vapor
Flash point: 73°F ≤ FP < 100°F [>95°F, GHS]	Class IC	Flammable Liquid, **Category 3 GHS FP Range: 73°F ≤ FP ≤ 140°F**	Warning; Flammable liquid and vapor
Flash point: 100°F ≤ FP ≤ 140°F	Class II		
Flash point: 140°F < FP ≤ 200°F [199.4 °F, GHS]	Class IIIA	Flammable Liquid, **Category 4**	Warning; Combustible liquid
Flash point > 200 °F	Class IIIB	Unclassified	NA

While building code design and enforcement officials historically use NFPA or IBC classifications, employers are required to control workplace chemical hazards under the OSHA Hazard Communication Standard which uses GHS hazard classifications. Midwest Chemical Safety also prefers to use the GHS system as it provides a more robust method of description of all hazards associated with chemical use (i.e. flammability, toxicity and environmental impact). In terms of flammability, however, the chart above is a helpful conversion.

The discussion that follows will exclusively use the United Nations *Globally Harmonized System of Classification and Labeling of Chemicals* (GHS) which forms the basis of the United States' Hazard Communication System. This hazard information and communication system is based on strict definitions found in *Guidance on the Application of the CLP Criteria: Guidance to Regulation EC No. 1272/2008 on classification, labeling and packaging of substances and mixtures* and the US Department of Labor/Occupational Health and Safety Administration Hazard Communication standard, 29 CFR 1910.1200.

For full operation, Oamic must warehouse and store flammable liquids in GHS Category 1 through GHS Category 4. (Recall, however, that Oamic does not engage in handling opened containers or product in normal operation.) Materials of increased flammability will primarily be alcohols, aldehydes and ketones used in flavoring and scenting.

Hazard vs. Risk

While often used interchangeably, "hazard" and "risk" are not the same thing.

Hazard is a property inherent in the situation which cannot be changed or altered. That property can be energy (i.e. working on the roof is inherently more hazardous than working on the ground) or chemical properties. For the purposes of this letter, I will be focusing on the increased flammability hazard presented by the incorporation of GHS Category 1 flammable liquids into the Oamic distribution operation. A common example of a flammability hazard is ethanol, a chemical common in the preparation of flavoring chemicals (e.g. pure vanilla extract): It is *always* flammable.

Risk, however, is the combination of the *probability of a given consequence* occurring and the *severity of that consequence.* When one speaks of risk, they do so in terms of "acceptable" and "unacceptable."

A common example of "acceptable" risk in which we all participate is filling our automobile tank with gasoline: While we recognize that a gasoline fire would cause catastrophic loss to our cars and perhaps our lives (i.e. the *consequence* of a fire); we use a pump that is electrically isolated from the fuel vapor and ensure there is adequate ventilation and no ignition sources around the tank when we fill it; thereby reducing *the probability* of a fire thus bringing the risk to an acceptable level.

An example of "unacceptable" risk (or one that MCS and most insurance companies would consider to be unacceptable) would be to hand the keys of a 600+ horsepower Porsche 911 to a 16-year old male who just received his driver's license. The *probability* of an automobile accident is quite high and the *consequences* of that accident would be catastrophic in terms of both property loss and human injury.

While the previous illustration of unacceptable risk provides some lightheartedness to the discussion at hand, the two examples together provide an important observation: We evaluate and control *risk* in industrial operations; not simply *hazard.*

The 2018 report to the Planning Board was effectively a report on the *hazards* of the Oamic's proposed inventory. Now that the facility is operational, the discussion must move to a *risk-based* discussion so that both Oamic and the Town of North Castle can make good, informed decisions. The necessary start of that discussion is an analysis of the hazards presented by the expansion of the Oamic inventory.

The Oamic Inventory

In order to fully discuss the Oamic inventory, it must be emphasized that Oamic is not engaged in *chemical use;* they are storing and distributing chemicals in sealed, DOT-approved shipping containers without opening or re-packaging those chemicals.

To date, the chemicals reported to the Armonk planning commission stored and distributed by Oamic represent a relatively small fraction of the chemicals that are used in the food, flavoring, and scenting industry. The most recent proposed addition to the Oamic inventory, consisting primarily of flammable liquids of GHS Category 2 and 3, completes the variety and hazard profiles of chemicals of those found in the industry to a large extent. Though many of the chemicals distributed by Oamic and stored in the facility are unclassifiable under Hazard Communication (GHS), the remaining inventory will have some form of GHS hazard classification associated *with the chemical's use*, such as flammability, acute toxicity or environmental impact. During normal operation, inventoried and stored chemicals will not be opened or used in other processes.

Hazard Analysis

Previous communication has focused on specific proposed chemicals for Oamic's distribution operations. The inclusion of some 40 new chemicals to the Oamic

distribution inventory, many of which are GHS Category 2 and 3 flammable liquids, allows for a more comprehensive review for Oamic's scope of operation.

The entirety of the inventory are products typical to the flavoring and scent manufacturing industries. Most fall under the general category of "hydrocarbon derivatives" (alcohols, aldehydes, and ketones) though there are some nitrogen- and sulfur-containing compounds. No product reviewed thus far in the expanded inventory is specifically regulated by the US EPA's National Primary Drinking Water Regulations. One product is found in the "List of Lists," benzoic acid, with a CERCLA reportable quantity of 5000 lbs. Note that "no listing" does not imply that a material is unregulated under those Acts.

(Note: As in previous analyses, MCS used independent, publicly available information, such as Millipore-Sigma's SDS database or the European Chemical Agency's hazard database. MCS did not rely on Oamic-supplied hazard information.)

General Inventory information

- To date, nearly 200 food/flavoring/scenting chemicals have been reviewed.
- Approximately 50 of the chemicals are not classifiable for any hazard class under GHS.
- Approximately 150 of those chemicals are liquids. Of those liquids, approximately 80 have a GHS Flammable Liquid classification of 2,3, or 4. Approximately 70 are not classifiable as flammable liquids.
- With respect to acute toxicity, several have some category GHS Acute Toxicity Classification.
- One product is identified as a respiratory sensitizer (α-ionone).
- One product (benzoic acid) is specifically identified on the US EPA "List of Lists" with a CERCLA reportable quantity of 5000 lbs.
- There were no particularly remarkable anomalies found in the analysis, other than those presented in previous correspondence.
- Eight products present a high acute aquatic toxicity classification (H400; "Very toxic to aquatic life" or H410; "Very toxic to aquatic life with long lasting effects"):
    - Allyl isothiocyanate (CAS 57-06-7)
    - Nerolidol (CAS 7212-44-4)
    - Indol (CAS 120-72-9)
    - β -Pinene (CAS 127-91-3)
    - Ocimene (CAS 13877-91-3)
    - Benzyl cinnamate (CAS 103-41-3)
    - Terpinolene (CAS 586-62-9)
    - Allyl heptanoate (CAS 142-19-8)

The 200-plus products reviewed thus far represent a good representation of Oamic's proposed "full operation." Inherent to the nature of Oamic's activities, they maintain a near real-time inventory of products inside the facility.

Risk assessment

Only community risk under fire and release conditions have been considered for this report. Risk to employees for releases has been discussed with Oamic employees and management during HAZWOPER training conducted on site.

Impact under fire conditions

For the overwhelming majority of the Oamic inventory, the combustion products will be no different than what would be found in any hydrocarbon fire: carbon (soot), carbon dioxide, carbon monoxide and unburned product. Given the inventory and the nitrogen and sulfur containing products, it would be expected to also find nitrogen oxides (NOx) and sulfur oxides (SOx) during a fire as well. While hydrogen sulfide may be produced in a fire, it is also flammable and would be only a minor contributor to the combustion products. Inadvertent mixing of unburned products will not cause an increase in toxicity. Burning products will not "recombine" to form products of higher toxicity. There are no known synergistic toxicological effects due to the combining combustion products or unburned product. The addition of quantities GHS Flammable Liquid Category 2 and 3 will increase the intensity of a fire at the facility until those chemicals are consumed.

These combustion products are common to both industrial and residential fires and do not present a unique toxicological profile to properly trained emergency responders wearing appropriate turn-out gear. In terms of toxicity, there is ***no increase in risk*** to professional firefighters due to a fire of the proposed increase in the variety of Oamic's inventory.

The surrounding community contains a community park, several restaurants, a vibrant "downtown" and a Montessori school approximately 1600 feet from the facility. In 2018, MCS reported that a large or uncontained fire at the Oamic facility will have an impact on the local community. This remains the case. However, the inclusion of GHS Flammable Liquid Category 2 and 3 chemicals will *increase* the overall risk of fire in the event of a release:

- A release of a low flash point material (i.e. Flammable Liquid Category 2,3) increases the probability of a fire under normal conditions.
- The intensity of a fire involving low flash-point material is generally greater – i.e. the consequence of a fire is greater.

This increase in overall risk is, in the opinion of Midwest Chemical Safety **sufficiently mitigated** as explained in the "Risk Mitigation" section below.

MCS continues to anticipate that there will be high level of public concern and anxiety associated with a fire at the facility simply due to the "chemical" nature of the material. The major concern will be respiratory irritation within the community.

Impact under spill conditions

Any appreciably large spill allowed off-site is expected to have localized, short-term environmental impact, particularly to the Bear Gutter Creek and the associated wetlands identified in the initial environmental report by HES. The environmental impact will be largely mitigated by the physical properties and small, individual packaging of the inventory. In general, low miscibility (liquids) and low solubility (solids) will limit downstream transport. "Large spills" are greatly discriminated against by Oamic's use of small quantity containers.

Environmental data was reviewed on all products where available. The addition of the eight products mentioned in the Hazard Assessment portion of this letter will tend to

increase the risk to the Bear Gutter Creek in the event a release is allowed outside of containment and enters the environment.

This increase in overall risk is, in the opinion of Midwest Chemical Safety sufficiently mitigated as explained in the "Risk Mitigation" section below.

The most probable off-site release scenario remains the puncturing of two 55-gallon drums just outside the loading dock area where liquid product may enter the storm drains. As of April 2021, all employees have been trained that the first immediate actions of an incident which may threaten release near the loading dock are to cover the storm drains with a temporary cover and use available emergency response equipment to dike and divert any flow away from the drains. Employees are required to annually demonstrate proficiency in preventing off-site releases; the next proficiency test is in the Spring of 2022.

Risk mitigation at the Oamic Facility

The Oamic facility has incorporated several **layers of protection** to minimize the risk associated with fire and spill to bring it to an acceptable level in the opinion of Midwest Chemical Safety. These layers of protection fall into two broad categories: Engineered Safeguards and Administrative Controls.

Engineered Safeguards

Engineered safeguards are protection measures that are inherent in the design of a facility or system and do not require any operator input or action. The Oamic facility has numerous engineered safeguards in place:

Engineered fire prevention/mitigation:

- The warehouse area was built to the highest level of electrical safety classification, reducing the number of electrical ignition sources (thereby reducing the probability of an electrically induced fire).
- The warehouse is sprinklered, including in-rack sprinklers which will reduce the probability of a catastrophic fire involving the inventory and reduce the consequence of any fire in the area.
- The warehouse includes a special "bunker" for flammable and combustible liquids that has an additional state-of-the art suppression system that will reduce the consequence of a fire involving flammable or combustible liquids.
- While Building Fire Codes allow for "unlimited" quantities of flammable liquids in warehouses, the quantity of flammable material is, **in-fact** limited due to the design capacity of the building to prevent release to the environment.

Engineered release prevention:

- All incoming product arrives in DOT-approved shipping containers.
- The entire warehouse area is constructed of epoxy-over-concrete, similar in construction of in-ground swimming pools. This warehouse area will hold in excess of 200,000 gallons, which represents the entire anticipated liquid inventory plus the entire fire suppression water storage tank.
- There are no floor drains in the warehouse area where spilled product can escape.
- The vast majority of liquid containers are less than 30-gallons in quantity, thereby limiting any spilled materials.

Administrative Controls

Administrative controls are "work rules" and procedures that are put in place and enforced by management in order to prevent incidents or respond to incidents. Oamic has the required safety and environmental plans in place and workers are trained on those plans. In addition to those plans:

- Incoming product is supplied in DOT-approved shipping containers that are designed to resist damage and prevent leaks.
- Flammable liquids are segregated to the "bunker" room; they are not stored throughout the facility.
- Oamic does not engage in the manufacture of any product. Incoming packages are not opened – they are simply redistributed off site.
- Oamic employees are trained in spill response, with demonstrated competency in containing cleaning up spills up to 110 gallons.
- Oamic employees must demonstrate competence in handling materials to prevent releases. (i.e. fork lift training with demonstrated competency)
- Oamic has contracted preventative maintenance on all engineered controls and large systems such as their fire prevention systems and powered industrial trucks.
- Oamic has retained a hazardous waste company to assist in large spill management.
- Oamic is required to report its inventory to the Local Emergency Planning Committee (LEPC) on a regular basis so that the local community can work with Oamic to plan for emergencies.

Summary and Recommendations

The complete Oamic inventory, including flammable liquids represents a slight increase in risk to the community with respect to fire, and environmental impact in the event of a release. However, Oamic's engineered and administrative risk mitigation efforts and the extensive layers of protection minimize this risk. The complete inventory represents no substantial increase in risk to professional firefighters responding to fire emergency at the Oamic facility. Risk regarding community anxiety remains constant.

MCS views the overall risk of the facility to the community to be acceptable for full operation.

Dr. Elston reserves the right to revise the opinions contained herein should any new information become available. For questions regarding this opinion, Dr. Elston may be contacted at the phone number or email listed on the first page.

Sincerely,

Harry J. Elston, Ph.D., CIH, PMP

Scale: Each cell = 5 feet long and 5 feet wide = 1.5 meters long and 1.5 meters wide.

160 feet = 48.768 meters

50 feet = 15.24 meters

80 feet = 24.384 meters

Water Tower

Fire Pump

Walking Ramp

Door

Diesel Generator

Transformer

Wall + Space

Ramp

Water Tank

Vortex Room

Rolling Door

Forklift Ramp

Walkway

Electrical + Fire Alarm

Mechanical + Transformer

Toilets

Loading Dock

Laboratory

Lobby

Entrance

Office

Conference Room

Legend:

Sector A - Class IA Flammable Liquid or Less Flammable

Sector B - Other Class IA Flammable Liquid or Less Flammable

Sector C - General Storage; Not Classified

Legend of Products

Liquids:

- Unassigned
- Cassia Oil
- Cinnamic Aldehyde
- Spicy Liquids
  1. Cuminic Aldehyde2. Aneth
- Leafy Liquids (Terpenes)
  1. Citronella Oil
  2. Citronellal
  3. Cedarwood Oil
- Citrus/Fruity/Floral Liquids
  1. Citral
  2. Decanal
  3. Nonanal
  4. Linalool
  5. Phenylacetaldehyde
  6. Linalyl Acetate
  7. Allyl Hexanoate
  8. Ethyl Acetoacetate
  9. Methyl Benzoate
  10. Terpinyl Acetate
  11. Phenylethyl Alcohol
  12. Amyl (Alpha) Cinnamaldehyde
  13. Anisyl Alcohol
  14. Geraniol
  15. Geranylacetate
  16. Alpha-Ionone
  17. Beta-Ionone
  18. Hexyl (Alpha) Cinnamaldehyde
  19. Neryl Acetate
  20. Phenethyl Acetate
  21. Beta-Damascenone, 1% in Propylene Glycol
  22. Beta-Damascenone
  23. Anisyl Acetone
  24. Benzyl Acetate
  25. Benzyl Benzoate
  26. Diethyl Malonate
- Class II Liquids
  1. Trans 2-Hexenal2. Coffee Furanone3. A
- Class IC Liquids
  1. Ethyl Butyrate2. Ethyl 2-Methyl
- Sweet Liquids
  1. Furfuryl Alcohol2. 5-Meth
- Nutty Liquids
  1. 2-Acetyl Thiazole
  2. 2-Acetyl Pyridine
  3. 2-Ethyl-3,5-Dimethylpyrazine
  4. 2-Ethyl-3,6-Dimethylpyrazine
  5. 2-Acetyl-3-Methyl Pyrazine
  6. Nutty Pyrazine
  7. Popcorn Thiopyrazine
  8. 5-Methyl Quinoxaline
- Herbal/Green Liquids
  1. Melonal
  2. 2,4-Decadienal
  3. Styrallyl Acetate
  4. Theaspirane
  5. Trans-2-Hexenoic Aicd
  6. Methyl Salicylate
  7. Gamma Valerolactone
- Class IB Liquids
  1. Ethyl Acetate
  2. Trimethylamine 10% in Water
  3. Ethyl Propionate
  4. Ethanol
  5. Beta Damascenone 1% in Ethanol
- Dairy Liquids (Lactones)
  1. Gamma-Decalactone
  2. Delta-Decalactone
  3. Gamma-Undecalactone
  4. Delta-Dodecalactone
  5. Butyl Buturyl Lactate
  6. Gamma-Dodecalctone
  7. Gamma-Heptalactone
  8. Gamma-Nonalactone
  9. Gamma-Octalactone
  10. Delta-Nonalactone
  11. Delta-Undecalactone
  12. Gamma-Hexalactone
  13. Milk Lactone
  14. Delta-Tetradecalactone
- Smelly Liquids
  1. Sulfurol2. Ethanolamine3. 1-Oct
- Pungent Liquids
  1. Hexanoic Acid2. 2-Methylbutyric
- Low Odor Liquids
  1. Triethyl Citrate
  2. Propylene Glycol
  3. Triacetin
  4. Diethyl Succinate
  5. Monomenthyl Glutyrate
  6. Benzyl Alcohol
- Class IA Liquids
  1. Dimethyl Sulfide
- Drug Enforcement Agency
  1. Benzaldehyde
  2. Heliotropin
  3. Methyl Anthranilate
  4. Phenylacetic Acid
  5. Ethyl Phenylacetate
  6. Methyl Phenylacetate
  7. Isoamyl Phenylacetate
  8. Isobutyl Phenylacetate

Solids:

- Ethyl Maltol
- Maltol
- Strawberry Furanone
- Vanillin
- Ethyl Vanillin
- Raspberry Ketone
- Methyl Cyclopentenolone
- Decanoic Acid
- 2-Acetylpyrazine
- Guaiacol
- Alpha Terpineol
- Methyl Cinnamate
- Dihydrocoumarin
- Sweet Solids
  1. Cinnamic Acid2. Cinnamic Alcoh
- Odorless Solids
  1. Vitamin U2. Disodiu
- Smelly Solids
  1. Cysteine2. Methionine3. Tetrame

Index	Status	Product Name	CAS Number	Rack Allocation	Flash Point (Fahrenheit)	GHS Flammability Rating	2020 Fire Code of the State of New
1	New	Dimethyl Sulfide	75-18-3		-33	Flammable Liquid Category 1	Class IA, Flammable Liquid
2	New	Ethyl Acetate	141-78-6		24	Flammable Liquid Category 2	Class IB, Flammable Liquid
3	New	Trimethylamine 10% in Water	75-50-3		52	Flammable Liquid Category 2	Class IB, Flammable Liquid
4	New	Ethyl Propionate	105-37-3		54	Flammable Liquid Category 2	Class IB, Flammable Liquid
5	New	Ethanol	64-17-5		55	Flammable Liquid Category 2	Class IB, Flammable Liquid
6	New	Beta Damascenone 1% in Ethanol	64-17-5; 23696-85-7		63	Flammable Liquid Category 2	Class IB, Flammable Liquid
7	New	Acetyl Propionyl	600-14-6		66	Flammable Liquid Category 2	Class IB, Flammable Liquid
8	New	Vanilla Extract in Ethanol	64-17-5; 8024-06-4		76	Flammable Liquid Category 3	Class IC, Flammable Liquid
9	New	Ethyl Butyrate	105-54-4		78	Flammable Liquid Category 3	Class IC, Flammable Liquid
10	New	Ethyl 2-Methylbutyrate	7452-79-1		79	Flammable Liquid Category 3	Class IC, Flammable Liquid
11	New	3,4-Hexanedione	4437-51-8		81	Flammable Liquid Category 3	Class IC, Flammable Liquid
12	New	2,3-Hexanedione	3848-24-6		82	Flammable Liquid Category 3	Class IC, Flammable Liquid
13	New	Acetyl Isovaleryl	13706-86-0		91	Flammable Liquid Category 3	Class IC, Flammable Liquid
14	New	4-Hexen-3-One	2497-21-4		93	Flammable Liquid Category 3	Class IC, Flammable Liquid
15	New	Sabinene	3387-41-5		98	Flammable Liquid Category 3	Class IC, Flammable Liquid
16	New	2-Methyl-3-Furanthiol	28588-74-1		98	Flammable Liquid Category 3	Class IC, Flammable Liquid
17	New	Trans 2-Hexenal	6728-26-3		101	Flammable Liquid Category 3	Class II, Combustible Liquid
18	New	Coffee Furanone	3188-00-9		102	Flammable Liquid Category 3	Class II, Combustible Liquid
19	New	Acetic Acid	64-19-7		104	Flammable Liquid Category 3	Class II, Combustible Liquid
20	New	Acetoin	513-86-0		113	Flammable Liquid Category 3	Class II, Combustible Liquid
21	New	Furfuryl Mercaptan	98-02-2		113	Flammable Liquid Category 3	Class II, Combustible Liquid
22	New	Mustard Oil Allyl-Isothiocyanate	57-06-7		115	Flammable Liquid Category 3	Class II, Combustible Liquid
23	New	Ethyl Lactate	97-64-3		115	Flammable Liquid Category 3	Class II, Combustible Liquid
24	New	1,4-Cineole	470-67-7		117	Flammable Liquid Category 3	Class II, Combustible Liquid
25	New	Eucalyptus Oil Globulus 80%; 20% Impurities	8000-48-4		118	Flammable Liquid Category 3	Class II, Combustible Liquid
26	New	1,8-Cineole	470-82-6		120	Flammable Liquid Category 3	Class II, Combustible Liquid
27	New	2-Methyl-3-Tetrahydrofuranthiol	57124-84-5		124	Flammable Liquid Category 3	Class II, Combustible Liquid
28	New	Filbertone	81925-81-7		126	Flammable Liquid Category 3	Class II, Combustible Liquid
29	New	2,6-Dimethylpyrazine	108-50-9		127	Flammable Liquid Category 3	Class II, Combustible Liquid
30	New	2,5-Dimethyl Pyrazine	123-32-0		127	Flammable Liquid Category 3	Class II, Combustible Liquid
31	New	2,3-Dimethylpyrazine	5910-89-4		128	Flammable Liquid Category 3	Class II, Combustible Liquid
32	New	2,3,5-Trimethyl Pyrazine	14667-55-1		129	Flammable Liquid Category 3	Class II, Combustible Liquid
33	New	Trans-2-Hexenol	928-95-0		129	Flammable Liquid Category 3	Class II, Combustible Liquid
34	New	Propionic Acid	79-09-4		129	Flammable Liquid Category 3	Class II, Combustible Liquid
35	New	Acetol 95%; 5% Water	116-09-06		133	Flammable Liquid Category 3	Class II, Combustible Liquid
36	New	Tea Tree Oil	68647-73-4		135	Flammable Liquid Category 3	Class II, Combustible Liquid
37	New	2-Isobutyl Thiazole	18640-74-9		135	Flammable Liquid Category 3	Class II, Combustible Liquid
38	New	2-Ethyl-5-Methylpyrazine	13360-64-0		135	Flammable Liquid Category 3	Class II, Combustible Liquid
39	New	2-Ethyl-6-Methylpyrazine	13925-03-6		135	Flammable Liquid Category 3	Class II, Combustible Liquid
40	New	2-Isopropyl-4-Methyl Thiazole	15679-13-7		136	Flammable Liquid Category 3	Class II, Combustible Liquid
41	New	Trans 2-Hexenyl Acetate	2497-18-9		136	Flammable Liquid Category 3	Class II, Combustible Liquid
42	New	2-Ethyl-3-Methylpyrazine	15707-23-0		138	Flammable Liquid Category 3	Class II, Combustible Liquid
43	Approved	Furfural	98-01-1		140	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
44	Approved	Melonal	106-72-9	B - Herbal/Green Liquids	142	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
45	Approved	2-Octen-4-One	4623-27-0	B - Smelly Liquids	142	Flammable Liquid Category 4	Class IIIA, Combustible Liquid

46	Approved	Cassia Oil	8007-80-5	B - Cassia Oil	144	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
47	Approved	Nonanal	124-19-6	B - Citrus/Fruity/Floral	145	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
48	Approved	Methional	3268-49-3	B - Smelly Liquids	147	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
49	Approved	Benzaldehyde	100-52-7	DEA	147	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
50	Approved	Furfuryl Alcohol	98-00-0	B - Sweet Liquids	149	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
51	Approved	Theaspirane	36431-72-8	B - Herbal/Green Liquids	149	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
52	Approved	Allyl Hexanoate	123-68-2	B - Citrus/Fruity/Floral	151	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
53	Approved	Phenylacetaldehyde	122-78-1	B - Citrus/Fruity/Floral	154	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
54	Approved	2-Ethyl-3,5-Dimethylpyrazine	13925-07-0; 27043-05-6	B - Nutty Liquids	156	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
55	Approved	2-Ethyl-3,6-Dimethylpyrazine	13360-65-1; 27043-05-6	B - Nutty Liquids	156	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
56	Approved	1-Octen-3-Ol	3391-86-4	B - Smelly Liquids	160	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
57	Approved	2-Acetyl Furan	1192-62-7	B - Sweet Liquids	160	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
58	Approved	Furaneol Methyl Ether	4077-47-8	B - Sweet Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
59	Approved	5-Methyl Furfural	620-02-0	B - Sweet Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
60	Approved	Butyric Acid	107-92-6	B - Pungent Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
61	Approved	2-Acetyl Pyridine	1122-62-9	B - Nutty Liquids	163	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
62	Approved	Ethyl Acetoacetate	141-97-9	B - Citrus/Fruity/Floral	164	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
63	Approved	1-Octen-3-yl Acetate	2442-10-6	B - Smelly Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
64	Approved	2-Methylbutyric Acid	116-53-0	B - Pungent Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
65	Approved	Isovaleric Acid	503-74-2	B - Pungent Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
66	Approved	Linalool	78-70-6	B - Citrus/Fruity/Floral	172	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
67	Approved	2-Acetyl Thiazole	24295-03-02	B - Nutty Liquids	172	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
68	Approved	Nutty Pyrazine	23747-48-0	B - Nutty Liquids	174	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
69	Approved	2-Methoxy-3-Isobutylpyrazine; 2-Isobutyl-3-Methoxypyrazine	24683-00-9	B - Smelly Liquids	176	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
70	Approved	2-Acetyl-3-Methyl Pyrazine	23787-80-6	B - Nutty Liquids	176	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
71	Approved	Pyruvic Acid	127-17-3	B - Pungent Liquids	180	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
72	Approved	Citral	5392-40-5	B - Citrus/Fruity/Floral	180	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
73	Approved	Decanal	112-31-2	B - Citrus/Fruity/Floral	181	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
74	Approved	Methyl Benzoate	93-58-3	B - Citrus/Fruity/Floral	181	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
75	Approved	Ethyl Furanone	27538-10-9	B - Sweet Liquids	184	Flammable Liquid Category 4	Class IIIA, Combustible Liquid

76	Approved	Linalyl Acetate	115-95-7	B - Citrus/Fruity/Floral	185	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
77	Approved	Citronellal	106-23-0	B - Terpenes	187	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
78	Approved	Citronella Oil	8000-29-1	B - Terpenes	190	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
79	Approved	Diethyl Malonate	105-53-3	B - Citrus/Fruity/Floral	194	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
80	Approved	Ethanolamine	141-43-5	B - Smelly Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
81	Approved	Methyl Phenylacetate	101-41-7	Dea	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
82	Approved	Anethol	4180-23-8	B - Spicy Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
83	Approved	Styrallyl Acetate	93-92-5	B - Herbal/Green Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
84	Approved	Aniseed Star Oil	68952-43-2	B - Spicy Liquids	199	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
85	Approved	Cuminic Aldehyde	122-03-2	B - Spicy Liquids	199	Flammable Liquid Category 4	Class IIIA, Combustible Liquid
86	Approved	4-Oxoisophorone	1125-21-9	B - Smelly Liquids	201	Unclassified	Not Classified as Combustible Liquid
87	Approved	Ethyl Levulinate	539-88-8	B - Citrus/Fruity/Floral	201	Unclassified	Not Classified as Combustible Liquid
88	Approved	Benzyl Acetate	140-11-4	B - Citrus/Fruity/Floral	203	Unclassified	Not Classified as Combustible Liquid
89	Approved	Benzyl Alcohol	100-51-6	B - Low Odor Liquids	205	Unclassified	Not Classified as Combustible Liquid
90	Approved	Gamma Valerolactone	108-29-2	B - Herbal/Green Liquids	205	Unclassified	Not Classified as Combustible Liquid
91	Approved	Methyl Salicylate	119-36-8	B - Herbal/Green Liquids	205	Unclassified	Not Classified as Combustible Liquid
92	Approved	Gamma Hexalactone	695-06-7	B - Lactones	208	Unclassified	Not Classified as Combustible Liquid
93	Approved	Levulinic Acid	123-76-2	B - Sweet Liquids	208	Unclassified	Not Classified as Combustible Liquid
94	Approved	Neryl Acetate	141-12-8	B - Citrus/Fruity/Floral	210	Unclassified	Not Classified as Combustible Liquid
95	Approved	4-Methyl Guaiacol	93-51-6	B - Smelly Liquids	210	Unclassified	Not Classified as Combustible Liquid
96	Approved	Ethyl Phenylacetate	101-97-3	Dea	210	Unclassified	Not Classified as Combustible Liquid
97	Approved	Popcorn Thiopyrazine	2884-14-2/2882-20-4	B - Nutty Liquids	210	Unclassified	Not Classified as Combustible Liquid
98	Approved	Beta Damascenone, 1% in Propylene Glycol	57-55-6 / 23696-85-7	B - Citrus/Fruity/Floral	212	Unclassified	Not Classified as Combustible Liquid
99	Approved	Delta Nonalactone	3301-94-8	B - Lactones	212	Unclassified	Not Classified as Combustible Liquid
100	Approved	Beta Damascenone	23696-85-7	B - Citrus/Fruity/Floral	212	Unclassified	Not Classified as Combustible Liquid
101	Approved	2,4-Decadienal	25152-84-5	B - Herbal/Green Liquids	214	Unclassified	Not Classified as Combustible Liquid
102	Approved	Hexanoic Acid	142-62-1	B - Pungent Liquids	216	Unclassified	Not Classified as Combustible Liquid
103	Approved	Phenyl Ethyl Alcohol	60-12-8	B - Citrus/Fruity/Floral	216	Unclassified	Not Classified as Combustible Liquid
104	Approved	Geraniol	106-24-1	B - Citrus/Fruity/Floral	216	Unclassified	Not Classified as Combustible Liquid
105	Approved	Propylene Glycol (PG)	57-55-6	B - Low Odor Liquids	217	Unclassified	Not Classified as Combustible Liquid
106	Approved	Isoamyl Phenylacetate	102-19-2	Dea	219	Unclassified	Not Classified as Combustible Liquid

107	Approved	Geranyl Acetate	105-87-3	B - Citrus/Fruity/Floral	219	Unclassified	Not Classified as Combustible Liquid
108	Approved	Phenylethyl Acetate	103-45-7	B - Citrus/Fruity/Floral	221	Unclassified	Not Classified as Combustible Liquid
109	Approved	4-Ethyl Guaiacol	2785-89-9	B - Smelly Liquids	226	Unclassified	Not Classified as Combustible Liquid
110	Approved	Thiomenthone	38462-22-5	B - Smelly Liquids	226	Unclassified	Not Classified as Combustible Liquid
111	Approved	2-Methyl-2-Pentenoic Acid	3142-72-1	B - Pungent Liquids	226	Unclassified	Not Classified as Combustible Liquid
112	Approved	Gamma Dodecalactone	2305-05-7	B - Lactones	228	Unclassified	Not Classified as Combustible Liquid
113	Approved	Gamma Heptalactone	105-21-5	B - Lactones	230	Unclassified	Not Classified as Combustible Liquid
114	Approved	Delta Octalactone	698-76-0	B - Lactones	230	Unclassified	Not Classified as Combustible Liquid
115	Approved	Eugenyl Acetate	93-28-7	B - Spicy Liquids	230	Unclassified	Not Classified as Combustible Liquid
116	Approved	Sulfurol	137-00-8	B - Smelly Liquids	234	Unclassified	Not Classified as Combustible Liquid
117	Approved	Ionone - Beta	14901-07-6	B - Citrus/Fruity/Floral	234	Unclassified	Not Classified as Combustible Liquid
118	Approved	Gamma Undecalactone	104-67-6	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
119	Approved	Terpinyl Acetate	80-26-2/8007-35-0	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid
120	Approved	Gamma Octalactone	104-50-7	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
121	Approved	Anisyl Alcohol	105-13-5	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid
122	Approved	Trans 2-Hexenoic Acid	13419-69-7	B - Herbal/Green Liquids	235	Unclassified	Not Classified as Combustible Liquid
123	Approved	Gamma Nonalactone	104-61-0	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
124	Approved	Delta-Tetradecalactone	2721-22-4	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
125	Approved	Isobutyl Phenylacetate	102-13-6	Dea	235	Unclassified	Not Classified as Combustible Liquid
126	Approved	Cedarwood Oil	8000-27-9	B - Terpenes	235	Unclassified	Not Classified as Combustible Liquid
127	Approved	Acetoxy Furanone	4166-20-5	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid
128	Approved	Cinnamyl Acetate	103-54-8	B - Spicy Liquids	235	Unclassified	Not Classified as Combustible Liquid
129	Approved	Delta Decalactone	705-86-2	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
130	Approved	Gamma Decalactone	706-14-9	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
131	Approved	Anisyl Acetate	104-21-2	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid
132	Approved	Butyl Butyryl Lactate	7492-70-8	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
133	Approved	Hexyl (Alpha) Cinnamaldehyde	101-86-0	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid
134	Approved	Difurfuryl Disulphide	4437-20-1	B - Smelly Liquids	235	Unclassified	Not Classified as Combustible Liquid
135	Approved	Milk Lactone	72881-27-7	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
136	Approved	Delta Dodecalactone	713-95-1	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid
137	Approved	Delta-Undecalactone	710-04-3	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid

138	Approved	4-Methyl Octanoic Acid	54947-74-9	B - Pungent Liquids	235	Unclassified	Not Classified as Combustible Liquid
139	Approved	Cocal	21834-92-4	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid
140	Approved	5-Methyl Quinoxaline	13708-12-8	B - Nutty Liquids	235	Unclassified	Not Classified as Combustible Liquid
141	Approved	Sulfurol Acetate	656-53-1	B - Smelly Liquids	235	Unclassified	Not Classified as Combustible Liquid
142	Approved	Vanillin Isobutyrate	20665-85-4	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid
143	Approved	Vanillyl Butyl Ether	82654-98-6	B - Spicy Liquids	235	Unclassified	Not Classified as Combustible Liquid
144	Approved	Anisyl Acetone	104-20-1	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid
145	Approved	Anisic Aldehyde	123-11-5	B - Sweet Liquids	241	Unclassified	Not Classified as Combustible Liquid
146	Approved	Ionone -Alpha	127-41-3	B - Citrus/Fruity/Floral	244	Unclassified	Not Classified as Combustible Liquid
147	Approved	Furaneol Butyrate	114099-96-6	B - Citrus/Fruity/Floral	253	Unclassified	Not Classified as Combustible Liquid
148	Approved	Cinnamic Aldehyde	104-55-2	B - Cinnamic Aldehyde	257	Unclassified	Not Classified as Combustible Liquid
149	Approved	Monomenthyl Glutyrate	220621-22-7	B - Low Odor Liquids	279	Unclassified	Not Classified as Combustible Liquid
150	Approved	Triacetin	102-76-1	B - Low Odor Liquids	280	Unclassified	Not Classified as Combustible Liquid
151	Approved	Amyl (Alpha) Cinnamaldehyde	122-40-7	B - Citrus/Fruity/Floral	295	Unclassified	Not Classified as Combustible Liquid
152	Approved	Triethyl Citrate	77-93-0	B - Low Odor Liquids	311	Unclassified	Not Classified as Combustible Liquid
153	Approved	Benzyl Benzoate	120-51-4	B - Citrus/Fruity/Floral	316	Unclassified	Not Classified as Combustible Liquid
154	Approved	Diethyl Succinate	123-25-1	B - Low Odor Liquids	424	Unclassified	Not Classified as Combustible Liquid
155	New	Pyrazine Mixture, Type I	None	C - Smelly Solids	131	Unclassified	Not Classified as Flammable Solid
156	New	Pyrazine Mixture, Type II	None	C - Smelly Solids	138	Unclassified	Not Classified as Flammable Solid
157	New	Pyrazine Mixture, Type IIII	None	C - Smelly Solids	144	Unclassified	Not Classified as Flammable Solid
158	New	D-Borneol	464-43-7		149	Unclassified	Not Classified as Flammable Solid
159	New	D-Camphor	464-49-3		151	Unclassified	Not Classified as Flammable Solid
160	Approved	Guaiacol	90-05-1	C - Guaiacol	180	Unclassified	Not Classified as Flammable Solid
161	Approved	Alpha Terpineol	98-55-5	C - Alpha Terpineol	191	Unclassified	Not Classified as Flammable Solid
162	Approved	Furaneol Ethyl Ether	65330-49-6	C - Sweet Solids	192	Unclassified	Not Classified as Flammable Solid
163	Approved	Strawberry Furanone	3658-77-3	C - Strawberry Furanone	200	Unclassified	Not Classified as Flammable Solid
164	Approved	Glycine	57-40-6	C - Odorless Solids	211	Unclassified	Not Classified as Flammable Solid
165	Approved	Ethyl Maltol	4940-11-8	C - Ethyl Maltol	212	Unclassified	Not Classified as Flammable Solid
166	Approved	Ethyl Cyclopentenolone (ECP)	21835-01-8	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid
167	Approved	2-Acetylpyrazine	22047-25-2	C - 2-Acetylpyrazine	212	Unclassified	Not Classified as Flammable Solid
168	Approved	Raspberry Ketone	5471-51-2	C - Raspberry Ketone	212	Unclassified	Not Classified as Flammable Solid

169	Approved	Methyl Cyclopentenolone (MCP)	80-71-7; 765-70-8	C - Methyl Cyclopentenolone Mcp	212	Unclassified	Not Classified as Flammable Solid
170	Approved	Cinnamic Acid	140-10-3	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid
171	Approved	2-Acetyl Pyrrole	1072-83-9	C - Smelly Solids	212	Unclassified	Not Classified as Flammable Solid
172	Approved	Sugar Lactone	28664-35-9	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid
173	Approved	Maltol	118-71-8	C- Maltol	230	Unclassified	Not Classified as Flammable Solid
174	Approved	Decanoic Acid	334-48-5	C - Decanoic Acid	230	Unclassified	Not Classified as Flammable Solid
175	Approved	Succinic Acid	110-15-6	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid
176	Approved	Tetramethyl Pyrazine	1124-11-4	C - Smelly Solids	230	Unclassified	Not Classified as Flammable Solid
177	Approved	Heliotropin (Piperonal)	120-57-0	DEA	230	Unclassified	Not Classified as Flammable Solid
178	Approved	Disodium Succinate	150-90-3	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid
179	Approved	Dimethyl Cyclopentadione	13494-07-0	C - Sweet Solids	230	Unclassified	Not Classified as Flammable Solid
180	Approved	Methionine	63-68-3	C - Smelly Solids	230	Unclassified	Not Classified as Flammable Solid
181	Approved	Vitamin U	3493-12-7	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid
182	Approved	Maple Furanone	698-10-2	C - Sweet Solids	235	Unclassified	Not Classified as Flammable Solid
183	Approved	Dihydrocoumarin	119-84-6	C - Dihydrocoumarin	235	Unclassified	Not Classified as Flammable Solid
184	Approved	4-Vinyl Guaiacol	7786-61-0	C - Smelly Solids	235	Unclassified	Not Classified as Flammable Solid
185	Approved	Menthyl Lactate	59259-38-0	C - Odorless Solids	235	Unclassified	Not Classified as Flammable Solid
186	Approved	Veratraldehyde	120-14-9	C - Sweet Solids	235	Unclassified	Not Classified as Flammable Solid
187	Approved	Benzoic Acid	65-85-0	C - Odorless Solids	250	Unclassified	Not Classified as Flammable Solid
188	Approved	Indole	120-72-9	C - Smelly Solids	250	Unclassified	Not Classified as Flammable Solid
189	Approved	Methyl Anthranilate	134-20-3	DEA	253	Unclassified	Not Classified as Flammable Solid
190	Approved	Cinnamic Alcohol	104-54-1	C - Sweet Solids	259	Unclassified	Not Classified as Flammable Solid
191	Approved	Cysteine	7048-04-06	C - Smelly Solids	269	Unclassified	Not Classified as Flammable Solid
192	Approved	Phenylacetic Acid	103-82-2	DEA	270	Unclassified	Not Classified as Flammable Solid
193	Approved	Methyl Cinnamate	103-26-4	C - Methyl Cinnamate	286	Unclassified	Not Classified as Flammable Solid
194	Approved	Ethyl Vanillin	121-32-4	C - Ethyl Vanillin	293	Unclassified	Not Classified as Flammable Solid
195	Approved	Ethone	104-27-8	C - Sweet Solids	305	Unclassified	Not Classified as Flammable Solid
196	Approved	Vanillin	121-33-5	C - Vanillin	307	Unclassified	Not Classified as Flammable Solid
197	Approved	Benzyl Cinnamate	103-41-3	C - Sweet Solids	356	Unclassified	Not Classified as Flammable Solid
198	Approved	Anisic Acid	100-09-4	C - Smelly Solids	365	Unclassified	Not Classified as Flammable Solid

199	Approved	Rhamnose	3615-41-6	C - Odorless Solids	408	Unclassified	Not Classified as Flammable Solid

Index	Status	Product Name	CAS Number	United Nations	Room	Rack Allocation	Flash Point (Fahrenheit)	GHS Flammability Rating	2020 Fire Code of the State of New	Unit Container Type	Unit Weight (Kilogram)	Unit Volume	Density (Kg/L)	Density (Gallon/Kg)	Anticipate Maximum Weight	Anticipated Maximum	Total Weight (Kilogram)	391,151	Total Volume (Gallon)	44,470
1	New	Dimethyl Sulfide	75-18-3	1164	Sector A		-33	Flammable Liquid Category 1	Class IA, Flammable Liquid	Aluminum Bottle	5	2	0.84	0.31	500	157				
2	New	Ethyl Acetate	141-78-6	1173	Sector A		24	Flammable Liquid Category 2	Class IB, Flammable Liquid	Drum; U.N.-Certified	180	53	0.89	0.30	7,200	2,128		Limit per Room (Gallon)	Fire Code Class	Proposed Volume (Gallon)
3	New	Trimethylamine 10% in Water	75-50-3	1297	Sector A		52	Flammable Liquid Category 2	Class IB, Flammable Liquid	Aluminum Bottle	4	1	0.94	0.28	500	140		7,500	Class IA, Flammable Liquid	157
4	New	Ethyl Propionate	105-37-3	1195	Sector A		54	Flammable Liquid Category 2	Class IB, Flammable Liquid	Drum; U.N.-Certified	25	7	0.89	0.30	500	149			Class IB, Flammable Liquid	3,102
5	New	Ethanol	64-17-5	1170	Sector A		55	Flammable Liquid Category 2	Class IB, Flammable Liquid	Drum; U.N.-Certified	20	7	0.79	0.33	200	67		15,000	Class IC, Flammable Liquid	2,040
6	New	Beta Damascenone 1% in Ethanol	64-17-5; 23696-85-7	1170	Sector A		63	Flammable Liquid Category 2	Class IB, Flammable Liquid	Aluminum Bottle	1	0	0.79	0.33	200	67		24,000	Class II, Combustible Liquid	4,910
7	New	Acetyl Propionyl	600-14-6	1224	Sector A		66	Flammable Liquid Category 2	Class IB, Flammable Liquid	Drum; U.N.-Certified	20	6	0.96	0.28	2,000	552		48,000	Class III, Combustible Liquid	17,028
8	New	Vanilla Extract in Ethanol	64-17-5; 8024-06-4	1197	Sector A		76	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	1	0	0.81	0.33	2	1		n/a	Not Classified as Combustible Liquid	17,233
9	New	Ethyl Butyrate	105-54-4	1180	Sector A		78	Flammable Liquid Category 3	Class IC, Flammable Liquid	Drum; U.N.-Certified	25	8	0.88	0.30	3,600	1,082			Total	44,470
10	New	Ethyl 2-Methylbutyrate	7452-79-1	3272	Sector A		79	Flammable Liquid Category 3	Class IC, Flammable Liquid	Drum; U.N.-Certified	25	8	0.87	0.31	1,440	440				
11	New	3,4-Hexanedione	4437-51-8	1224	Sector A		81	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	1	0	0.94	0.28	100	28				
12	New	2,3-Hexanedione	3848-24-6	1224	Sector A		82	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	5	1	0.93	0.28	200	57				
13	New	Acetyl Isovaleryl	13706-86-0	1224	Sector A		91	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	1	0	0.90	0.29	200	59				
14	New	4-Hexen-3-One	2497-21-4	1224	Sector A		93	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	1	0	0.86	0.31	100	31				
15	New	Sabinene	3387-41-5	3295	Sector A		98	Flammable Liquid Category 3	Class IC, Flammable Liquid	Drum; U.N.-Certified	20	6	0.84	0.31	1,020	319				
16	New	2-Methyl-3-Furanthiol	28588-74-1	3071	Sector A		98	Flammable Liquid Category 3	Class IC, Flammable Liquid	Aluminum Bottle	1	0	1.10	0.24	100	24				
17	New	Trans 2-Hexenal	6728-26-3	n/a	Sector A		101	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	5	2	0.85	0.31	1,000	312				
18	New	Coffee Furanone	3188-00-9	1993	Sector A		102	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	5	1	1.03	0.26	500	128				
19	New	Acetic Acid	64-19-7	2789	Sector A		104	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	200	50	1.05	0.25	4,000	1,006				
20	New	Acetoin	513-86-0	2621	Sector A		113	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	25	7	1.01	0.26	2,000	523				
21	New	Furfuryl Mercaptan	98-02-2	1228	Sector A		113	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	1.13	0.23	50	12				
22	New	Mustard Oil Allyl-Isothiocyanate	57-06-7	1545	Sector A		115	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	5	1	1.01	0.26	500	131				
23	New	Ethyl Lactate	97-64-3	1192	Sector A		115	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	200	51	1.03	0.26	4,000	1,026				
24	New	1,4-Cineole	470-67-7	1993	Sector A		117	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	25	7	0.89	0.30	250	74				
25	New	Eucalyptus Oil Globulus 80%; 20% Impurities	8000-48-4	1993	Sector A		118	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	180	53	0.90	0.29	2	1				
26	New	1,8-Cineole	470-82-6	1993	Sector A		120	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	25	7	0.92	0.29	2	1				
27	New	2-Methyl-3-Tetrahydrofuranthiol	57124-84-5	1993	Sector A		124	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	1.04	0.25	100	25				
28	New	Filbertone	81925-81-7	1224	Sector A		126	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.85	0.31	100	31				
29	New	2,6-Dimethylpyrazine	108-50-9	1325	Sector A		127	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.97	0.27	500	137				
30	New	2,5-Dimethyl Pyrazine	123-32-0	1993	Sector A		127	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.99	0.27	100	27				
31	New	2,3-Dimethylpyrazine	5910-89-4	1993	Sector A		128	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	1.01	0.26	200	52				
32	New	2,3,5-Trimethyl Pyrazine	14667-55-1	1993	Sector A		129	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.98	0.27	500	135				
33	New	Trans-2-Hexenol	928-95-0	1987	Sector A		129	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	5	2	0.83	0.32	200	64				
34	New	Propionic Acid	79-09-4	3463	Sector A		129	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	25	7	0.98	0.27	1,000	270				
35	New	Acetol 95%; 5% Water	116-09-06	1224	Sector A		133	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	25	6	1.07	0.25	1,000	248				
36	New	Tea Tree Oil	68647-73-4	1993	Sector A		135	Flammable Liquid Category 3	Class II, Combustible Liquid	Drum; U.N.-Certified	180	53	0.90	0.29	1,800	530				
37	New	2-Isobutyl Thiazole	18640-74-9	1993	Sector A		135	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	1.00	0.27	50	13				
38	New	2-Ethyl-5-Methylpyrazine	13360-64-0	1993	Sector A		135	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.96	0.28	100	28				
39	New	2-Ethyl-6-Methylpyrazine	13925-03-6	1993	Sector A		135	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.96	0.28	100	28				
40	New	2-Isopropyl-4-Methyl Thiazole	15679-13-7	1993	Sector A		136	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	1.00	0.26	100	26				
41	New	Trans 2-Hexenyl Acetate	2497-18-9	3272	Sector A		136	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.90	0.29	100	29				
42	New	2-Ethyl-3-Methylpyrazine	15707-23-0	1993	Sector A		138	Flammable Liquid Category 3	Class II, Combustible Liquid	Aluminum Bottle	1	0	0.98	0.27	200	54				
43	Approved	Furfural	98-01-1	1199	Sector A		140	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	Drum; U.N.-Certified	20	5	1.16	0.23	1,000	228				
44	Approved	Melonal	106-72-9	n/a	Sector B	B - Herbal/Green Liquids	142	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	0.85	0.31	25	8				
45	Approved	2-Octen-4-One	4623-27-0	n/a	Sector B	B - Smelly Liquids	142	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.85	0.31	225	70				
46	Approved	Cassia Oil	8007-80-5	n/a	Sector B	B - Cassia Oil	144	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	55-Gallon Drum	200	55	1.04	0.26	20,000	5,105				
47	Approved	Nonanal	124-19-6	n/a	Sector B	B - Citrus/Fruity/Floral	145	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.82	0.32	250	81				
48	Approved	Methional	3268-49-3	2785	Sector B	B - Smelly Liquids	147	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	1.04	0.25	10	3				
49	Approved	Benzaldehyde	100-52-7	1990	Sector B	DEA	147	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	55-Gallon Drum	200	55	1.04	0.25	7,200	1,827				
50	Approved	Furfuryl Alcohol	98-00-0	2874	Sector B	B - Sweet Liquids	149	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.13	0.23	1,350	317				
51	Approved	Theaspirane	36431-72-8	n/a	Sector B	B - Herbal/Green Liquids	149	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.94	0.28	100	28				
52	Approved	Allyl Hexanoate	123-68-2	2810	Sector B	B - Citrus/Fruity/Floral	151	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	55-Gallon Drum	200	55	0.88	0.30	4,000	1,195				
53	Approved	Phenylacetaldehyde	122-78-1	3265	Sector B	B - Citrus/Fruity/Floral	154	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	n/a	n/a	50	n/a				
54	Approved	2-Ethyl-3,5-Dimethylpyrazine	13925-07-0; 27043-05-6	n/a	Sector B	B - Nutty Liquids	156	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.95	0.28	10	3				
55	Approved	2-Ethyl-3,6-Dimethylpyrazine	13360-65-1; 27043-05-6	n/a	Sector B	B - Nutty Liquids	156	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.95	0.28	10	3				
56	Approved	1-Octen-3-Ol	3391-86-4	2810	Sector B	B - Smelly Liquids	160	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.83	0.32	225	72				
57	Approved	2-Acetyl Furan	1192-62-7	2811	Sector B	B - Sweet Liquids	160	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	1.10	0.24	50	12				
58	Approved	Furaneol Methyl Ether	4077-47-8	n/a	Sector B	B - Sweet Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.09	0.24	250	61				
59	Approved	5-Methyl Furfural	620-02-0	n/a	Sector B	B - Sweet Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.10	0.24	900	217				
60	Approved	Butyric Acid	107-92-6	2820	Sector B	B - Pungent Liquids	162	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	55-Gallon Drum	200	55	0.95	0.28	10,400	2,883				

61	Approved	2-Acetyl Pyridine	1122-62-9	n/a	Sector B	B - Nutty Liquids	163	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.08	0.25	100	25				
62	Approved	Ethyl Acetoacetate	141-97-9	n/a	Sector B	B - Citrus/Fruity/Floral	164	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.02	0.26	900	233				
63	Approved	1-Octen-3-yl Acetate	2442-10-6	n/a	Sector B	B - Smelly Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.87	0.31	100	31				
64	Approved	2-Methylbutyric Acid	116-53-0	3265	Sector B	B - Pungent Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.93	0.28	4,500	1,276				
65	Approved	Isovaleric Acid	503-74-2	3265	Sector B	B - Pungent Liquids	165	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	55-Gallon Drum	180	55	0.92	0.29	5,760	1,649				
66	Approved	Linalool	78-70-6	n/a	Sector B	B - Citrus/Fruity/Floral	172	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.86	0.31	450	139				
67	Approved	2-Acetyl Thiazole	24295-03-02	n/a	Sector B	B - Nutty Liquids	172	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.22	0.22	100	22				
68	Approved	Nutty Pyrazine	23747-48-0	n/a	Sector B	B - Nutty Liquids	174	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.05	0.25	25	6				
69	Approved	2-Methoxy-3-Isobutylpyrazine; 2-Isobutyl-3-Methoxypyrazine	24683-00-9	n/a	Sector B	B - Smelly Liquids	176	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	0.98	0.27	30	8				
70	Approved	2-Acetyl-3-Methyl Pyrazine	23787-80-6	n/a	Sector B	B - Nutty Liquids	176	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	1.11	0.24	10	2				
71	Approved	Pyruvic Acid	127-17-3	3265	Sector B	B - Pungent Liquids	180	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.25	0.21	100	21				
72	Approved	Citral	5392-40-5	n/a	Sector B	B - Citrus/Fruity/Floral	180	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.89	0.30	225	67				
73	Approved	Decanal	112-31-2	3082	Sector B	B - Citrus/Fruity/Floral	181	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.83	0.32	450	143				
74	Approved	Methyl Benzoate	93-58-3	n/a	Sector B	B - Citrus/Fruity/Floral	181	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.08	0.24	25	6				
75	Approved	Ethyl Furanone	27538-10-9	n/a	Sector B	B - Sweet Liquids	184	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.13	0.23	250	58				
76	Approved	Linalyl Acetate	115-95-7	n/a	Sector B	B - Citrus/Fruity/Floral	185	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	1-Liter Aluminum can	1	0.26	n/a	n/a	10	n/a				
77	Approved	Citronellal	106-23-0	3082	Sector B	B - Terpenes	187	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.85	0.31	100	31				
78	Approved	Citronella Oil	8000-29-1	n/a	Sector B	B - Terpenes	190	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.88	0.30	225	68				
79	Approved	Diethyl Malonate	105-53-3	n/a	Sector B	B - Citrus/Fruity/Floral	194	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.05	0.25	225	56				
80	Approved	Ethanolamine	141-43-5	2491	Sector B	B - Smelly Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.01	0.26	50	13				
81	Approved	Methyl Phenylacetate	101-41-7	n/a	Sector B	Dea	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.03	0.26	1,800	461				
82	Approved	Anethol	4180-23-8	n/a	Sector B	B - Spicy Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.98	0.27	1,350	363				
83	Approved	Styrallyl Acetate	93-92-5	n/a	Sector B	B - Herbal/Green Liquids	196	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	1.02	0.26	225	58				
84	Approved	Aniseed Star Oil	68952-43-2	3082	Sector B	B - Spicy Liquids	199	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.98	0.27	225	61				
85	Approved	Cuminic Aldehyde	122-03-2	n/a	Sector B	B - Spicy Liquids	199	Flammable Liquid Category 4	Class IIIA, Combustible Liquid	30-Liter Jerry Can	25	8	0.98	0.27	450	122				
86	Approved	4-Oxoisophorone	1125-21-9	n/a	Sector B	B - Smelly Liquids	201	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	n/a	n/a	100	n/a				
87	Approved	Ethyl Levulinate	539-88-8	3265	Sector B	B - Citrus/Fruity/Floral	201	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.01	0.26	450	118				
88	Approved	Benzyl Acetate	140-11-4	n/a	Sector B	B - Citrus/Fruity/Floral	203	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.05	0.25	450	113				
89	Approved	Benzyl Alcohol	100-51-6	n/a	Sector B	B - Low Odor Liquids	205	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.04	0.25	1,350	342				
90	Approved	Gamma Valerolactone	108-29-2	n/a	Sector B	B - Herbal/Green Liquids	205	Unclassified	Not Classified as Combustible Liquid	25-Liter Jerry Can	20	5	1.05	0.25	225	57				
91	Approved	Methyl Salicylate	119-36-8	n/a	Sector B	B - Herbal/Green Liquids	205	Unclassified	Not Classified as Combustible Liquid	55-Gallon Drum	200	55	1.18	0.22	4,000	895				
92	Approved	Gamma Hexalactone	695-06-7	n/a	Sector B	B - Lactones	208	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.02	0.26	25	6				
93	Approved	Levulinic Acid	123-76-2	n/a	Sector B	B - Sweet Liquids	208	Unclassified	Not Classified as Combustible Liquid	55-Gallon Drum	200	55	1.14	0.23	8,000	1,860				
94	Approved	Neryl Acetate	141-12-8	n/a	Sector B	B - Citrus/Fruity/Floral	210	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.91	0.29	450	131				
95	Approved	4-Methyl Guaiacol	93-51-6	n/a	Sector B	B - Smelly Liquids	210	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.09	0.24	100	24				
96	Approved	Ethyl Phenylacetate	101-97-3	n/a	Sector B	Dea	210	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.03	0.26	50	13				
97	Approved	Popcorn Thiopyrazine	2884-14-2/2882-20-4	3334	Sector B	B - Nutty Liquids	210	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.13	0.23	100	23				
98	Approved	Beta Damascenone, 1% in Propylene Glycol	57-55-6 / 23696-85-7	n/a	Sector B	B - Citrus/Fruity/Floral	212	Unclassified	Not Classified as Combustible Liquid	1-Liter Aluminum can	1	0.26	1.02	0.26	100	26				
99	Approved	Delta Nonalactone	3301-94-8	n/a	Sector B	B - Lactones	212	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.98	0.27	100	27				
100	Approved	Beta Damascenone	23696-85-7	3082	Sector B	B - Citrus/Fruity/Floral	212	Unclassified	Not Classified as Combustible Liquid	1-Liter Aluminum can	1	0.26	0.94	0.28	10	3				
101	Approved	2,4-Decadienal	25152-84-5	n/a	Sector B	B - Herbal/Green Liquids	214	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.87	0.31	100	31				
102	Approved	Hexanoic Acid	142-62-1	2829	Sector B	B - Pungent Liquids	216	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.92	0.29	4,500	1,288				
103	Approved	Phenyl Ethyl Alcohol	60-12-8	n/a	Sector B	B - Citrus/Fruity/Floral	216	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.02	0.26	900	234				
104	Approved	Geraniol	106-24-1	n/a	Sector B	B - Citrus/Fruity/Floral	216	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.87	0.30	450	137				
105	Approved	Propylene Glycol (PG)	57-55-6	n/a	Sector B	B - Low Odor Liquids	217	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.04	0.25	900	229				

106	Approved	Isoamyl Phenylacetate	102-19-2	n/a	Sector B	Dea	219	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.98	0.27	100	27				
107	Approved	Geranyl Acetate	105-87-3	n/a	Sector B	B - Citrus/Fruity/Floral	219	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.90	0.29	450	132				
108	Approved	Phenylethyl Acetate	103-45-7	n/a	Sector B	B - Citrus/Fruity/Floral	221	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.03	0.26	225	58				
109	Approved	4-Ethyl Guaiacol	2785-89-9	n/a	Sector B	B - Smelly Liquids	226	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.06	0.25	20	5				
110	Approved	Thiomenthone	38462-22-5	2810	Sector B	B - Smelly Liquids	226	Unclassified	Not Classified as Combustible Liquid	1-Liter Aluminum can	1	0.26	1.00	0.27	5	1				
111	Approved	2-Methyl-2-Pentenoic Acid	3142-72-1	3261	Sector B	B - Pungent Liquids	226	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.98	0.27	450	122				
112	Approved	Gamma Dodecalactone	2305-05-7	n/a	Sector B	B - Lactones	228	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.93	0.28	450	127				
113	Approved	Gamma Heptalactone	105-21-5	n/a	Sector B	B - Lactones	230	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.99	0.27	450	120				
114	Approved	Delta Octalactone	698-76-0	n/a	Sector B	B - Lactones	230	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.00	0.27	100	27				
115	Approved	Eugenyl Acetate	93-28-7	n/a	Sector B	B - Spicy Liquids	230	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.08	0.25	450	110				
116	Approved	Sulfurol	137-00-8	n/a	Sector B	B - Smelly Liquids	234	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.20	0.22	2,700	596				
117	Approved	Ionone - Beta	14901-07-6	3082	Sector B	B - Citrus/Fruity/Floral	234	Unclassified	Not Classified as Combustible Liquid	25-Liter Jerry Can	20	5	0.94	0.28	500	141				
118	Approved	Gamma Undecalactone	104-67-6	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.94	0.28	900	253				
119	Approved	Terpinyl Acetate	80-26-2/8007-35-0	n/a	Sector B	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.95	0.28	225	62				
120	Approved	Gamma Octalactone	104-50-7	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	25-Liter Jerry Can	20	5	0.97	0.27	450	123				
121	Approved	Anisyl Alcohol	105-13-5	n/a	Sector B	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.11	0.24	450	107				
122	Approved	Trans 2-Hexenoic Acid	13419-69-7	3261	Sector B	B - Herbal/Green Liquids	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	n/a	n/a	50	n/a				
123	Approved	Gamma Nonalactone	104-61-0	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.96	0.28	450	124				
124	Approved	Delta-Tetradecalactone	2721-22-4	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.93	0.28	50	14				
125	Approved	Isobutyl Phenylacetate	102-13-6	n/a	Sector B	Dea	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.98	0.27	25	7				
126	Approved	Cedarwood Oil	8000-27-9	n/a	Sector B	B - Terpenes	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.94	0.28	450	127				
127	Approved	Acetoxy Furanone	4166-20-5	3082	Sector B	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.16	0.23	450	103				
128	Approved	Cinnamyl Acetate	103-54-8	n/a	Sector B	B - Spicy Liquids	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.05	0.25	900	226				
129	Approved	Delta Decalactone	705-86-2	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.96	0.27	1,800	493				
130	Approved	Gamma Decalactone	706-14-9	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.95	0.28	1,350	376				
131	Approved	Anisyl Acetate	104-21-2	n/a	Sector B	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.10	0.24	50	12				
132	Approved	Butyl Butyryl Lactate	7492-70-8	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.97	0.27	225	61				
133	Approved	Hexyl (Alpha) Cinnamaldehyde	101-86-0	3082	Sector B	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.95	0.28	225	62				
134	Approved	Difurfuryl Disulphide	4437-20-1	3334	Sector B	B - Smelly Liquids	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.23	0.21	20	4				
135	Approved	Milk Lactone	72881-27-7	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.92	0.29	20	6				
136	Approved	Delta Dodecalactone	713-95-1	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.94	0.28	900	252				
137	Approved	Delta-Undecalactone	710-04-3	n/a	Sector B	B - Lactones	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.96	0.28	100	28				
138	Approved	4-Methyl Octanoic Acid	54947-74-9	3265	Sector B	B - Pungent Liquids	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	0.90	0.29	100	29				
139	Approved	Cocal	21834-92-4	n/a	Sector B	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.96	0.27	100	27				
140	Approved	5-Methyl Quinoxaline	13708-12-8	n/a	Sector B	B - Nutty Liquids	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.12	0.24	50	12				
141	Approved	Sulfurol Acetate	656-53-1	3334	Sector B	B - Smelly Liquids	235	Unclassified	Not Classified as Combustible Liquid	1-Liter Aluminum can	1	0.26	1.16	0.23	10	2				
142	Approved	Vanillin Isobutyrate	20665-85-4	n/a	Sector B	B - Sweet Liquids	235	Unclassified	Not Classified as Combustible Liquid	25-Liter Jerry Can	20	5	1.11	0.24	225	54				
143	Approved	Vanillyl Butyl Ether	82654-98-6	n/a	Sector B	B - Spicy Liquids	235	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.05	0.25	25	6				
144	Approved	Anisyl Acetone	104-20-1	n/a	Sector B	B - Citrus/Fruity/Floral	235	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.04	0.25	450	114				
145	Approved	Anisic Aldehyde	123-11-5	n/a	Sector B	B - Sweet Liquids	241	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.12	0.24	900	212				
146	Approved	Ionone -Alpha	127-41-3	n/a	Sector B	B - Citrus/Fruity/Floral	244	Unclassified	Not Classified as Combustible Liquid	1-Liter Aluminum can	1	0.26	0.93	0.28	100	28				
147	Approved	Furaneol Butyrate	114099-96-6	n/a	Sector B	B - Citrus/Fruity/Floral	253	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	1.09	0.24	250	61				
148	Approved	Cinnamic Aldehyde	104-55-2	n/a	Sector B	B - Cinnamic Aldehyde	257	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.05	0.25	4,500	1,136				
149	Approved	Monomenthyl Glutyrate	220621-22-7	n/a	Sector B	B - Low Odor Liquids	279	Unclassified	Not Classified as Combustible Liquid	6.25-Liter Aluminum Drum	5	2	n/a	n/a	50	n/a				
150	Approved	Triacetin	102-76-1	n/a	Sector B	B - Low Odor Liquids	280	Unclassified	Not Classified as Combustible Liquid	55-Gallon Drum	200	55	1.15	0.23	10,400	2,381				
151	Approved	Amyl (Alpha) Cinnamaldehyde	122-40-7	3082	Sector B	B - Citrus/Fruity/Floral	295	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	0.96	0.27	225	62				

152	Approved	Triethyl Citrate	77-93-0	n/a	Sector B	B - Low Odor Liquids	311	Unclassified	Not Classified as Combustible Liquid	55-Gallon Drum	230	55	1.14	0.23	11,040	2,570				
153	Approved	Benzyl Benzoate	120-51-4	3082	Sector B	B - Citrus/Fruity/Floral	316	Unclassified	Not Classified as Combustible Liquid	30-Liter Jerry Can	25	8	1.12	0.24	225	53				
154	Approved	Diethyl Succinate	123-25-1	n/a	Sector B	B - Low Odor Liquids	424	Unclassified	Not Classified as Combustible Liquid	55-Gallon Drum	200	55	1.04	0.25	4,000	1,020				
155	New	Pyrazine Mixture, Type I	None	1993	Sector C	C - Smelly Solids	131	Unclassified	Not Classified as Flammable Solid	Carton; Plastic Bags	1	n/a	n/a	n/a	1	n/a				
156	New	Pyrazine Mixture, Type II	None	1993	Sector C	C - Smelly Solids	138	Unclassified	Not Classified as Flammable Solid	Carton; Plastic Bags	1	n/a	n/a	n/a	1	n/a				
157	New	Pyrazine Mixture, Type IIII	None	1993	Sector C	C - Smelly Solids	144	Unclassified	Not Classified as Flammable Solid	Carton; Plastic Bags	1	n/a	n/a	n/a	1	n/a				
158	New	D-Borneol	464-43-7	1312	Sector C		149	Unclassified	Not Classified as Flammable Solid	Carton; Plastic Bags	1	n/a	n/a	n/a	100	n/a				
159	New	D-Camphor	464-49-3	2717	Sector C		151	Unclassified	Not Classified as Flammable Solid	Carton; Plastic Bags	1	n/a	n/a	n/a	2	n/a				
160	Approved	Guaiacol	90-05-1	n/a	Sector C	C - Guaiacol	180	Unclassified	Not Classified as Flammable Solid	6.25-Liter Aluminum Drum	5	n/a	n/a	n/a	1,500	n/a				
161	Approved	Alpha Terpineol	98-55-5	n/a	Sector C	C - Alpha Terpineol	191	Unclassified	Not Classified as Flammable Solid	6.25-Liter Aluminum Drum	5	n/a	n/a	n/a	4,000	n/a				
162	Approved	Furaneol Ethyl Ether	65330-49-6	n/a	Sector C	C - Sweet Solids	192	Unclassified	Not Classified as Flammable Solid	1-Kg Carton	1	n/a	n/a	n/a	100	n/a				
163	Approved	Strawberry Furanone	3658-77-3	n/a	Sector C	C - Strawberry Furanone	200	Unclassified	Not Classified as Flammable Solid	10-Kilogram Carton	10	n/a	n/a	n/a	54,000	n/a				
164	Approved	Glycine	57-40-6	n/a	Sector C	C - Odorless Solids	211	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
165	Approved	Ethyl Maltol	4940-11-8	n/a	Sector C	C - Ethyl Maltol	212	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	18,000	n/a				
166	Approved	Ethyl Cyclopentenolone (ECP)	21835-01-8	n/a	Sector C	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	125	n/a				
167	Approved	2-Acetylpyrazine	22047-25-2	n/a	Sector C	C - 2-Acetylpyrazine	212	Unclassified	Not Classified as Flammable Solid	10-Kilogram Carton	10	n/a	n/a	n/a	1,080	n/a				
168	Approved	Raspberry Ketone	5471-51-2	n/a	Sector C	C - Raspberry Ketone	212	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	4,500	n/a				
169	Approved	Methyl Cyclopentenolone (MCP)	80-71-7; 765-70-8	n/a	Sector C	C - Methyl Cyclopentenolone Mcp	212	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	22,500	n/a				
170	Approved	Cinnamic Acid	140-10-3	n/a	Sector C	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
171	Approved	2-Acetyl Pyrrole	1072-83-9	n/a	Sector C	C - Smelly Solids	212	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	20	n/a				
172	Approved	Sugar Lactone	28664-35-9	n/a	Sector C	C - Sweet Solids	212	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	250	n/a				
173	Approved	Maltol	118-71-8	n/a	Sector C	C- Maltol	230	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	36,000	n/a				
174	Approved	Decanoic Acid	334-48-5	n/a	Sector C	C - Decanoic Acid	230	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	4,500	n/a				
175	Approved	Succinic Acid	110-15-6	n/a	Sector C	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
176	Approved	Tetramethyl Pyrazine	1124-11-4	n/a	Sector C	C - Smelly Solids	230	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	250	n/a				
177	Approved	Heliotropin (Piperonal)	120-57-0	n/a	Sector C	DEA	230	Unclassified	Not Classified as Flammable Solid	40-Liter Open-Top Drum	25	n/a	n/a	n/a	450	n/a				
178	Approved	Disodium Succinate	150-90-3	n/a	Sector C	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
179	Approved	Dimethyl Cyclopentadione	13494-07-0	n/a	Sector C	C - Sweet Solids	230	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	250	n/a				
180	Approved	Methionine	63-68-3	n/a	Sector C	C - Smelly Solids	230	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
181	Approved	Vitamin U	3493-12-7	n/a	Sector C	C - Odorless Solids	230	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
182	Approved	Maple Furanone	698-10-2	3335	Sector C	C - Sweet Solids	235	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	125	n/a				
183	Approved	Dihydrocoumarin	119-84-6	n/a	Sector C	C - Dihydrocoumarin	235	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	7,200	n/a				
184	Approved	4-Vinyl Guaiacol	7786-61-0	n/a	Sector C	C - Smelly Solids	235	Unclassified	Not Classified as Flammable Solid	1-Kg Carton	1	n/a	n/a	n/a	10	n/a				
185	Approved	Menthyl Lactate	59259-38-0	n/a	Sector C	C - Odorless Solids	235	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	20	n/a				
186	Approved	Veratraldehyde	120-14-9	n/a	Sector C	C - Sweet Solids	235	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
187	Approved	Benzoic Acid	65-85-0	n/a	Sector C	C - Odorless Solids	250	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
188	Approved	Indole	120-72-9	2811	Sector C	C - Smelly Solids	250	Unclassified	Not Classified as Flammable Solid	5-Kg Carton	5	n/a	n/a	n/a	250	n/a				
189	Approved	Methyl Anthranilate	134-20-3	n/a	Sector C	DEA	253	Unclassified	Not Classified as Flammable Solid	6.25-Liter Aluminum Drum	5	n/a	n/a	n/a	1,000	n/a				
190	Approved	Cinnamic Alcohol	104-54-1	n/a	Sector C	C - Sweet Solids	259	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	50	n/a				
191	Approved	Cysteine	7048-04-06	n/a	Sector C	C - Smelly Solids	269	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
192	Approved	Phenylacetic Acid	103-82-2	3335	Sector C	DEA	270	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	900	n/a				
193	Approved	Methyl Cinnamate	103-26-4	n/a	Sector C	C - Methyl Cinnamate	286	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
194	Approved	Ethyl Vanillin	121-32-4	n/a	Sector C	C - Ethyl Vanillin	293	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	900	n/a				
195	Approved	Ethone	104-27-8	n/a	Sector C	C - Sweet Solids	305	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
196	Approved	Vanillin	121-33-5	n/a	Sector C	C - Vanillin	307	Unclassified	Not Classified as Flammable Solid	25-Kilogram Fiber Drum	25	n/a	n/a	n/a	45,000	n/a				

197	Approved	Benzyl Cinnamate	103-41-3	n/a	Sector C	C - Sweet Solids	356	Unclassified	Not Classified as Flammable Solid	1-Kg Carton	1	n/a	n/a	n/a	10	n/a				
198	Approved	Anisic Acid	100-09-4	n/a	Sector C	C - Smelly Solids	365	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	450	n/a				
199	Approved	Rhamnose	3615-41-6	n/a	Sector C	C - Odorless Solids	408	Unclassified	Not Classified as Flammable Solid	25-Kg Fiber Drum	25	n/a	n/a	n/a	9,900	n/a				

Sector A	Volume Limit (Gallon)	Legal Citation	Proposed Volume (Gallon)	10,437
Class IA, Flammable Liquid	7,500	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	157	
Class IB, Flammable Liquid	15,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	3,102	
Class IC, Flammable Liquid			2,040	
Class II, Combustible Liquid	24,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	4,910	
Class III, Combustible Liquid	48,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	228	
Not Classified as Combustible Liquid	n/a	n/a	0	

Sector B	Volume Limit (Gallon)	Legal Citation	Proposed Volume (Gallon)	34,033
Class IA, Flammable Liquid	7,500	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	0	
Class IB, Flammable Liquid	15,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	0	
Class IC, Flammable Liquid			0	
Class II, Combustible Liquid	24,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	0	
Class III, Combustible Liquid	48,000	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)	16,801	
Not Classified as Combustible Liquid	n/a	n/a	17,233	

Regulator	Reason for Limit	Type of Product Limited	Maximum Storage Height (Feet)	Volume Limit (Gallon)	Caculated Weight (Kilogram)	Legal Citation
Town of North Castle	Containment Capacity for Liquid Spills	All Liquid Products	n/a	50,000	236,563	Planning Board Resolution
Regulator	**Reason for Limit**	**Type of Product Limited**	**Maximum Storage Height (Feet)**	**Volume Limit per Room (Gallon)**	**Caculated Weight (Kilogram)**	**Legal Citation**
State of New York	Fire Code of the State of New York	Class IA	25	7,500	35,484	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)
State of New York	Fire Code of the State of New York	Class IB & Class IC	25	15,000	70,969	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)
State of New York	Fire Code of the State of New York	Class II	25	24,000	113,550	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)
State of New York	Fire Code of the State of New York	Class III	40	48,000	227,100	FCNYS Sec. 5704.3.7.2, Table 5704.3.6.3(3)
Regulator	**Reason for Limit**	**Topic**	**Details**			**Legal Citation**
State of New York	Fire Code of the State of New York	Mixed Storage	1. Do not mix product classifications on the same rack. 2. In case of mixed storage, each rack is deemed to be storing the most			FCNYS Sec. 5704.3.7.2.1; FCNYS Sec. 5704.3.8.1.1
State of New York	Fire Code of the State of New York	Storage Height	Our maximum storage height is 24 feet in Sector C.			n/a
Regulator	**Reason for Limit**	**Topic**	**Details**			**Legal Citation**
New York City Department of Environmental Protection	Protection of Drinking Water	Bulk Storage of Chemicals	Chemical containers may not store more than 1,000 kilograms per container.			

Nature	Description	Text	Citation
Governing Law	New York Fire Code	"All buildings and structures...shall comply with the provisions and requirements of the 2020 FCNYS."	19 CRR-NY 1225.2
General Storage	Quantity Limit	"The maximum allowable quantity per [room] shall be as specified in Tables 5003.1.1(1) through 5003.1.1(4)."	FCNYS Sec. 5003.1.1
General Storage	Class IA Flammable Liquid	60 gallons in an automatic-sprinklered facility.	FCNYS Sec. 5003.1.1., Table 5003.1.1(1)
General Storage	Class IB and Class IC Flammable Liquid	240 gallons in an automatic-sprinklered facility.	FCNYS Sec. 5003.1.1., Table 5003.1.1(1)
General Storage	Class II Combustible Liquid	240 gallons in an automatic-sprinklered facility.	FCNYS Sec. 5003.1.1., Table 5003.1.1(1)
General Storage	Class IIIA Combustible Liquid	660 gallons in an automatic-sprinklered facility.	FCNYS Sec. 5003.1.1., Table 5003.1.1(1)
General Storage	Class IIIB Combustible Liquid	"Quantities shall not be limited in a building equipped throughout with an approved automatic sprinkler system..."	FCNYS Sec. 5003.1.1., Footnote f to Table 5003.1.1(1)
General Storage	Special Rule	"The storage and use of hazardous materials in quantities exceeding the maximum allowable quantity...indicated in Tables 5003.1.1(1) through 5003.1.1(4) shall be in accordance with [other provisions of] this chapter."	FCNYS Sec. 5003.1.4
Flammable & Combustible Liquids	Governing Law	"The storage of flammable and combustible liquids in containers and tanks shall be in accordance with this section [5704]..."	FCNYS Sec. 5704.1
Flammable & Combustible Liquids	Governing Law	"Storage of flammable and combustible liquids in closed containers that do not exceed 60 gallons (227 L) in individual capacity and portable tanks that do not exceed 660 gallons (2498 L) in individual capacity, and limited transfers incidental thereto, shall comply	FCNYS Sec. 5704.3
Flammable & Combustible Liquids	Quantity Limit	"For occupancies other than Group M wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area indicated in Table 5003.1.1(1) and shall not exceed the additional	FCNYS Sec. 5704.3.4.1
Flammable & Combustible Liquids	Class IA Flammable Liquid	60 gallons if Sprinklered in accordance with...	FCNYS Sec. 5704.3.4.1, Table 5704.3.4.1
Flammable & Combustible Liquids	Class IB and Class IC Flammable Liquid	15,000 gallons if Sprinklered in accordance with...	FCNYS Sec. 5704.3.4.1, Table 5704.3.4.1
Flammable & Combustible Liquids	Class IIIB Combustible Liquid	Unlimited if Sprinklered in accordance with...	FCNYS Sec. 5704.3.4.1, Table 5704.3.4.1
Flammable & Combustible Liquids	Special Rule	"Quantities exceeding those allowed in control areas set forth in Section 5704.3.4.1 shall be in liquid storage rooms or liquid storage warehouses in accordance with Sections 5704.3.7 and 5704.3.8."	FCNYS Sec. 5704.3.4.3
Liquid Storage Room	Quantity Limit	"The quantity limits and storage arrangements in liquid storage rooms shall be in accordance with Tables 5704.3.6.3(2) and 5704.3.6.3(3) and Sections 5704.3.7.2.1 through 5704.3.7.2.3."	FCNYS Sec. 5704.3.7.2
Liquid Storage Room	Class IA Flammable Liquid	7,500 gallons, if stored on racks; 12,000 gallons, if stored as piles	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Room	Class IB and Class IC Flammable Liquid	15,000 gallons, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Room	Class II Combustible Liquid	24,000 gallons, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Room	Class III Combustible Liquid	48,000 gallons, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Room	Special Rule	"Buildings used for storage of flammable or combustible liquids in quantities exceeding those set forth in...Section 57.04.3.7 for liquid storage rooms shall comply with Sections 5704.3.8.1 through 5704.3.8.5..."	FCNYS Sec. 5704.3.8
Liquid Storage Warehouse	Quantity Limit	"The total quantities of liquids in a liquid storage warehouse shall not be limited. The arrangement of storage shall be in accordance with Table 5704.3.6.3(2) or 5704.3.6.3(3)."	FCNYS Sec. 5704.3.8.1
Liquid Storage Warehouse	Class IA Flammable Liquid	7,500 gallons per liquid storage room, if stored on racks; 12,000 gallons per liquid storage room, if stored as piles	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Warehouse	Class IB and Class IC Flammable Liquid	15,000 gallons per liquid storage room, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Warehouse	Class II Combustible Liquid	24,000 gallons per liquid storage room, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Liquid Storage Warehouse	Class III Combustible Liquid	48,000 gallons per liquid storage room, if stored on racks	FCNYS Sec. 5704.3.6.3, Table 5704.3.6.3(2)
Mixed Storage	Liquid Storage Room	"Where two or more classes of liquids are stored in a pile or rack...[t]he quantity in that pile or rack shall not exceed the smallest of the maximum quantities for the classes of liquids stored in accordance with Table 5704.3.6.3(2) or 5704.3.6.3(3)."	FCNYS Sec. 5704.3.7.2.1
Mixed Storage	Liquid Storage Warehouse	"Mixed storage shall be in accordance with Section 5704.3.7.2.1."	FCNYS Sec. 5704.3.8.1.1

Definition	Container	"A vessel of 60 gallons (227 L) or less in capacity used for transporting or storing hazardous materials."	FCNYS Sec. 202
Definition	2020 FCNYS	2020 FCNYS is defined as "[t]he publication entitled 2020 Fire Code of New York State (publication date: November 2019), published by the International Code Council, Inc."	19 CRR-NY 1225.1; 19 CRRNY 1219.2
Definition	Physical Hazards	Physical hazards include "Combustible liquids...Flammable solids, liquids and gases."	FCNYS Sec. 5001.2.2.1
Definition	Liquid Storage Room	"A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in a closed condition."	FCNYS Sec. 202
Definition	Liquid Storage Warehouse	"A building classified as a Group H-2 or H-3 occupancy used for the storage of flammable or combustible liquids in a closed condition."	FCNYS Sec. 202
Definition	Group H-3 Occupancy	"Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified as Group H-3. Such materials shall include...Class I, II or IIIA flammable or combustible liquids..."	BCNYS Sec. 307.5

Term	Definition under the International Fire Code, 2015 Edition.	Section Reference	in Common Language
Class IA, Flammable Liquid	a liquid having a flash point below 73 degrees Fahrenheit (23 degrees Celcius) and having a boiling point below 100 degrees Fahrenheit (38 degrees Celcius)	202	a liquid that can both ignite below room temperature and boil below body temperature
Class IB, Flammable Liquid	a lquid having a flash point below 73 degrees Fahrenheit (23 degrees Celcius) and having a boiling point at or above 100 degrees Fahrenheit (38 degrees Celcius)	202	a liquid that can ignite at below room temperature but requires body temperature to boil
Class IC, Flammable Liquid	a liquid having a flash point at or above 73 degrees Fahrenheit (23 degrees Celcius) and below 100 degrees Fahrenheit (38 degrees Celcius)	202	a liquid that can ignite at room temperature
Class II, Combustible Liquid	a liquid having a closed-cup flash point at or above 100 degrees Fahrenheit (38 degrees Celcius) and below 140 degrees Fahrenheit (60 degrees Celcius)	202	a liquid that can ignite at body temperature
Class IIIA, Combustible Liquid	a liquid having a closed-cup flash point at or above 140 degrees Fahrenheit (60 degrees Celcius) and below 200 degrees Fahrenheit (93 degrees Celcius)	202	a liquid that requires more than body temperature to ignite
Class IIIB, Combustible Liquid	a liquid having a closed-cup flash point at or above 200 degrees Fahrenheit (93 degrees Celcius)	202	a liquid that requires a temperature close to water's boiling temperature to ignite
Flammable Solid (Class IV)	a solid...which has an ignition temperature below 212 degrees Fahrenheit (100 degrees Celcius)...	202	a solid that can ignite at water's boiling temperature
Cryogenic Fluid	a fluid having a boiling point lower than -130 degrees Fahrenheit (-89 degrees Celcius) at 14.7 pounds per square inch atmosphere (psia), wich is 101.3 kPa	202	
Classification	**Definition of Controlled Substance Classification**	**Section Reference**	**Examples**
Controlled Substance	"a drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V...The term does not include distilled spirits, wine, malt beverages, or tobacco..."	21 U.S.C. 802(6)	
Schedule I	"Substances in this schedule have no currently accepted medical use in the United States, a lack of accepted safety for use under medical supervision, and a high potential for abuse."	21 C.F.R. 1308.11 through 1308.15	heroin, lysergic acid diethylamide (LSD), marijuana (cannabis), peyote, methaqualone, and 3,4-methylenedioxymethamphetamine ("Ecstasy")
Schedule II	"Substances in this schedule have a high potential for abuse which may lead to severe psychological or physical dependence."	21 C.F.R. 1308.11 through 1308.15	morphine, opium, codeine, and hydrocodone, amphetamine (Dexedrine®, Adderall®), methamphetamine (Desoxyn®), and methylphenidate (Ritalin®)
Schedule III	"Substances in this schedule have a potential for abuse less than substances in Schedules I or II and abuse may lead to moderate or low physical dependence or high psychological dependence."	21 C.F.R. 1308.11 through 1308.15	(Tylenol with Codeine®), and buprenorphine (Suboxone®), anabolic steroids such as Depo®-Testosterone
Schedule IV	"Substances in this schedule have a low potential for abuse relative to substances in Schedule III."	21 C.F.R. 1308.11 through 1308.15	alprazolam (Xanax®), carisoprodol (Soma®), clonazepam (Klonopin®), clorazepate (Tranxene®), diazepam (Valium®), lorazepam (Ativan®), midazolam (Versed®), temazepam
Schedule V	"Substances in this schedule have a low potential for abuse relative to substances listed in Schedule IV and consist primarily of preparations containing limited quantities of certain narcotics."	21 C.F.R. 1308.11 through 1308.15	(Robitussin AC®, Phenergan with Codeine®), and ezogabine.
List I	"a chemical specified by regulation of the Attorney General as a chemical that is used in manufacturing a controlled substance...and is important to the manufacture of the controlled substances..."	21 U.S.C. 802(34)	

Inventory Notation	Each Cell = 1 Foot Tall = 0.3 Meters Tall										
	Sector C	32-Foot Ceiling									
		Ventilation Equipment									
5	Beam				Sector B	24-Foot Ceiling					
						Ventilation Equipment					
		Drum									
		Pallet									
4	Beam				Beam				Sector A	18-Foot Ceiling	
										Vortex Sprinkers	
		Drum				Drum				Drum	
		Pallet				Pallet				Pallet	
3	Beam				Beam				Beam		
		Drum				Drum				Drum	
		Pallet				Pallet				Pallet	
2	Beam				Beam				Beam		
		Drum				Drum				Drum	
		Pallet				Pallet				Pallet	
1	Ground				Ground				Ground		

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MATERIAL SAFETY DATA SHEET

DIMETHYL SULFIDE NATURAL

1. *Identification*

- Chemical name: Dimethyl sulfide
- Synonyms: Methyl sulfide; 2-Thiapropane; Thiobismethane
- Molecular Formula: C_2H_6S
- Molecular Weight: 62.14
- CAS No.: 75-18-3
- FEMA No.: 2746
- Einecs No.: 200-846-2
- FDA: 172.510
- CoE: 483

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2)	H225
Eye irritation (Category 2)	H319

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapour
H319	Causes serious eye irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.

P403 + P235	Store in a well-ventilated place. Keep cool.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Dimethyl Sulfide ≥ 99%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

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5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Disagreeable, intense boiled cabbage
• pH value at 10g/l H_2O	N/A
• Boiling point:	38°C
• Flash point:	-36 °C
• Melting point:	-98 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	2.2 %(V)
• Upper explosion limit:	19.7 %(V)
• Ignition temperature:	206°C
• Oxidizing properties:	N/A
• Vapor pressure:	402.7 hPa at 20 °C 1,356 hPa at 55 °C

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- Specific gravity @25°C: 0.842 – 0.847
- Solubility in water: Insoluble
- Organic solvents: 1 mL in 1 mL 95% alcohol

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10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

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11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 3.300 mg/kg
  LC50 Inhalation - rat - 4 h - 40250 ppm
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

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12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 213 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 29 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae static test	EC50 - Pseudokirchneriella subcapitata (green algae) - > 113.7 mg/l - 72 h

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13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID:1164 IMDG:1164 IATA:1164
- **Shipping Name:**
  ADR/RID: DIMETHYL SULPHIDE
  IMDG: DIMETHYL SULPHIDE
  IATA: Dimethyl sulphide
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:II IMDG:II IATA:II

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N27461-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL ACETATE NATURAL

1. *Identification*

- Chemical name: Ethyl Acetate
- Synonyms: Ethyl ethanoate
- Molecular Formula: $C_4H_8O_2$
- Molecular Weight: 88.11
- CAS No.: 141-78-6
- FEMA No.: 2414
- Einecs No.: 205-500-4
- FDA: 172.510
- CoE: 191

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 2)	H225
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H336

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapour
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
Supplemental Hazard Statement	

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EUH066 Repeated exposure may cause skin dryness or cracking.

- **Other hazards** none

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3. *Composition/information on ingredients*

- Ethyl Acetate ≥99.0%

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4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

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5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form:	Clear Liquid
• Color:	Colorless
• Odor	Sweet, fruity odor
• PH value at 10g/l H_2O	N/A
• Boiling point:	76.5 – 77.5 °C
• Flash point:	-3.0 °C - closed cup
• Melting point:	-84 °C
• Explosive properties:	N/A
• Lower explosion limit:	2.2 %(V)
• Upper explosion limit:	11.5 %(V)
• Ignition temperature:	427 °C
• Oxidizing properties:	N/A
• Vapor pressure:	97,3 hPa at 20,0 °C
• Specific gravity @25 °C:	0.894-0.898
• Solubility in water:	Soluble
• Organic solvents:	Soluble

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid: Heat, flames and sparks.
- Substances to be avoided: Strong oxidizing agents
- Hazardous decomposition: Carbon oxides
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 5,620 mg/kg
  LC50 Inhalation - mouse - 2 h - 45,000 mg/m3
  LD50 Dermal - rabbit - > 18,000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 350.00 - 600.00 mg/l - 96 h LC50 - Pimephales promelas (fathead minnow) - 220.00 - 250.00 mg/l - 96 h
Toxicity to daphnia	EC50 - Daphnia magna (Water flea) - 2,300.00 - 3,090.00 mg/l - 24 h LC50 - Daphnia magna (Water flea) - 560 mg/l - 48 h
Toxicity to algae	EC50 - Algae - 4,300.00 mg/l - 24 h EC50 - SELENASTRUM - 1,800.00 - 3,200.00 mg/l - 72 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID:1173 IMDG:1173 IATA: 1173

- **Shipping Name:**
  ADR/RID: ETHYL ACETATE
  IMDG: ETHYL ACETATE
  IATA: Ethyl acetate
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-N24140-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TTIMETHYLAMINE NATURAL 10% IN WATER

1. *Identification*

- Chemical name: Natural Trimethyl Amine 10% in Water
- Synonyms: Trimethylamine solution
- Molecular Formula: C_3H_9N
- Molecular Weight: 59.11
- CAS No.: 75-50-3
- FEMA No.: 3241
- Einecs No.: 200-875-0
- FDA: 173.20
- CoE: 10497

---

2. *Hazards identification*

- **Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Flammable liquids (Category 2)	H225
Skin corrosion (Category 1B)	H314
Acute toxicity, Oral (Category 4)	H302
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapour
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage
H335	May cause respiratory irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces.
P261	Avoid breathing vapours.
P280	Wear protective gloves/ protective clothing/ eye protection/face protection
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician
Supplemental Hazard	

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Statements	none
Other hazards	Lachrymator

3. *Composition/information on ingredients*

- Assay (C_3H_9N) 9%-11%

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic Charge

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- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances and refrigerated (2~11 oC), protected from light
  NOTE: REFRIGERATE DRUM PRIOR TO OPENING!!!!

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	liquid
• Color:	Colorless to pale yellow
• Odor	Characteristic odor
• pH value at 10g/l H_2O	No data available
• Boiling point (ºC):	95 °C at 1,013 hPa
• Flash point (ºC):	11°C
• Melting point (ºC):	-3 °C
• Explosive properties:	No data available
• Lower explosion limit:	No data available
• Upper explosion limit:	No data available
• Ignition temperature:	190 °C
• Oxidizing properties:	No data available
• Vapor pressure@25°C:	3.28 kPa
• Specific gravity @25°C:	0.9448-0.9848
• Solubility	Soluble in water, ether, ethanol

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:1297 IMDG:1297 IATA:1297
- Shipping Name:
  ADR/RID: TRIMETHYLAMINE, AQUEOUS SOLUTION
  IMDG: TRIMETHYLAMINE, AQUEOUS SOLUTION
  IATA: Trimethylamine, aqueous solution
- Hazard Class:
  ADR/RID:3(8) IMDG:3(8) IATA:3(8)
- Packing Group:
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N32411-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL PROPIONATE NATURAL

1. *Identification*

- Chemical name: Ethyl Propionate
- Synonyms: Ethyl propanoate
- Molecular Formula: $C_5H_{10}O_2$
- Molecular Weight: 102.13
- CAS No.: 105-37-3
- FEMA No.: 2456
- Einecs No.: 203-291-4
- FDA: 172.510
- CoE: 402

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 2) H225

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapour
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Ethyl Propionate ≥99.0%

---

4. *First aid measures*

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- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

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• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colourless
• Odor	Fruity, rum, ethereal
• PH value at 10g/l H_2O	N/A
• Boiling point	99°C - lit.
• Flash point	12 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.886 - 0.889
• Solubility in water	1ml in 42ml water
• Organic solvents	Soluble in most fixed oils, miscible in alcohol, prop glycol,

10. Stability and reactivity

• Chemical Stability	Stable Stable under recommended storage conditions.
• Conditions to Avoid	Avoid moisture. Heat. Heat, flames and sparks.
• Substances to be avoided	Oxidizing agents
• Hazardous decomposition	Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
• Hazardous	Will not occur

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11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 8.732 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available
- Other Studies — No information available

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1195 IMDG:1195 IATA:1195
- **Shipping Name:**
  ADR/RID: ETHYL PROPIONATE
  IMDG: ETHYL PROPIONATE
  IATA: Ethyl Propionate
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N24560-11
- Creation Date — Jan. 21, 22
- Revision — 11.0

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- Disclaimer

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SAFETY DATA SHEET

Version 6.8
Revision Date 05/25/2021
Print Date 02/05/2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Ethyl Alcohol, pure

Product Number : 459836
Brand : Sigma-Aldrich
Index-No. : 603-002-00-5
CAS-No. : 64-17-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225
Eye irritation (Category 2A), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapor.

H319	Causes serious eye irritation.

Precautionary statement(s)

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	Absolute alcohol
Formula	:	C_2H_6O
Molecular weight	:	46.07 g/mol
CAS-No.	:	64-17-5
EC-No.	:	200-578-6
Index-No.	:	603-002-00-5

Component	Classification	Concentration
ethanol		
	Flam. Liq. 2; Eye Irrit. 2A; H225, H319 Concentration limits: >= 50 %: Eye Irrit. 2A, H319;	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Carbon oxides
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.

5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Change contaminated clothing. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Hygroscopic.
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	1,000 ppm 1,900 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		STEL	1,000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans		
		TWA	1,000 ppm 1,900 mg/m3	USA. NIOSH Recommended Exposure Limits
		PEL	1,000 ppm 1,900 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 120 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: colorless
b)	Odor	pungent
c)	Odor Threshold	0.1 ppm
d)	pH	7.0 at 10 g/l at 20 °C (68 °F)
e)	Melting point/freezing point	Melting point/range: -114 °C (-173 °F)
f)	Initial boiling point and boiling range	78 °C 172 °F
g)	Flash point	13 °C (55 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 13.5 %(V) Lower explosion limit: 2.5 %(V)
k)	Vapor pressure	0.57 hPa at 19.6 °C (67.3 °F)
l)	Vapor density	1.6
m)	Relative density	No data available
n)	Water solubility	1,000 g/l at 20 °C (68 °F) - completely miscible
o)	Partition coefficient: n-octanol/water	log Pow: -0.35 at 24 °C (75 °F) - Bioaccumulation is not expected.
p)	Autoignition temperature	455 °C (851 °F) at 1,013 hPa - DIN 51794
q)	Decomposition temperature	Distillable in an undecomposed state at normal pressure.
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Conductivity	< 1 µS/cm
Surface tension	72.75 mN/m at 20 °C (68 °F)

Relative vapor density	1.6

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapors may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Risk of explosion/exothermic reaction with:
hydrogen peroxide
perchlorates
perchloric acid
Nitric acid
mercury(II) nitrate
permanganic acid
Nitriles
peroxi compounds
Strong oxidizing agents
nitrosyl compounds
Peroxides
sodium
Potassium
halogen oxides
calcium hypochlorite
nitrogen dioxide
metallic oxides
uranium hexafluoride
iodides
Chlorine
Alkali metals
Alkaline earth metals
alkali oxides
Ethylene oxide
silver
with
Nitric acid
silver compounds
with
Ammonia
potassium permanganate
with
conc. sulfuric acid
Risk of ignition or formation of inflammable gases or vapours with:
halogen-halogen compounds
chromium(VI) oxide
chromyl chloride
Fluorine
hydrides
Oxides of phosphorus
platinum

Nitric acid
with
potassium permanganate

10.4 Conditions to avoid
Warming.
Warming.

10.5 Incompatible materials
rubber, various plastics

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 10,470 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - 124.7 mg/l
(OECD Test Guideline 403)
Dermal: No data available
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 24 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye irritation.
(OECD Test Guideline 405)

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: Methanol

Germ cell mutagenicity
Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: dominant lethal test
Species: Mouse

Application Route: Oral
Method: OECD Test Guideline 478
Result: Positive results were obtained in some in vivo tests.

Carcinogenicity
No data available

IARC: 1 - Group 1: Carcinogenic to humans (ethanol)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Repeated dose toxicity - Rat - male - Oral - NOAEL (No observed adverse effect level) - 1,730 mg/kg - LOAEL (Lowest observed adverse effect level) - 3,200 mg/kg

RTECS: KQ6300000
irritant effects, respiratory paralysis, Dizziness, narcosis, inebriation, euphoria, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 15,300 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Ceriodaphnia dubia (water flea) - 5,012 mg/l - 48 h Remarks: (ECHA)
Toxicity to algae	static test ErC50 - Chlorella vulgaris (Fresh water algae) - 275 mg/l

	- 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 15 d Result: ca.95 % - Readily biodegradable. (OECD Test Guideline 301E)
Biochemical Oxygen Demand (BOD)	930 - 1,670 mg/g Remarks: (Lit.)
Theoretical oxygen demand	2,100 mg/g Remarks: (Lit.)

12.3 Bioaccumulative potential

Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 1170 Class: 3 Packing group: II
Proper shipping name: Ethanol
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG

UN number: 1170 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: ETHANOL

IATA

UN number: 1170 Class: 3 Packing group: II
Proper shipping name: Ethanol

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
ethanol	64-17-5	1993-04-24

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
ethanol	64-17-5	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
ethanol	64-17-5	1993-04-24

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.8 Revision Date: 05/25/2021 Print Date: 02/05/2022

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MATERIAL SAFETY DATA SHEET

BETA DAMASCENONE NATURAL 1% ETHANOL

1. *Identification*

• Chemical name	1-(2,6,6-Trimethyl-1,3-cyclohexadienyl)-2-buten-1-one solution
• Synonyms	Floriffone solution; 4-(2,6,6-Trimethylcyclohexa-1,3-dienyl)but-2-en-4-one solution
• Molecular Formula	$C_{13}H_{18}O$
• Molecular Weight	190.28
• CAS No.	23696-85-7/64-17-5
• FEMA No.	3420
• Einecs No.	245-833-2/200-578-6
• FDA	172.510
• CoE	-

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2)	H225
Skin sensitisation (Category 1)	H317

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapour.
H317	May cause an allergic skin reaction.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
Supplemental Hazard	none

- **Other hazards** none

3. Composition/information on ingredients

- β-Damascenone ≥1%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C and protected under nitrogen

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to yellow
• Odor	Berry
• PH value at 10g/l H_2O	N/A
• Boiling point	78°C
• Flash point	17°C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity@25°C	0.794 - 0.838
• Solubility in water	Soluble

- Organic solvents — Soluble in most organic solvents

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — No information available.
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1170 IMDG:1170 IATA:1170
- **Shipping Name**
  ADR/RID: ETHANOL SOLUTION
  IMDG: ETHANOL SOLUTION
  IATA: Ethanol solution
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

---

16. Other information

- Document Number: B-N34203-11
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- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ACETYL PROPIONYL NATURAL

1. *Identification*

- Chemical name — Pentane-2,3-dione
- Synonyms — 2,3-Pentanedione
- Molecular Formula — $C_5H_8O_2$
- Molecular Weight — 100.12
- CAS No. — 600-14-6
- FEMA No. — 2841
- Einecs No. — 209-984-8
- FDA — 172.510
- CoE — 2039

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 2) H225

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Danger

  Hazard statement(s)

  H225 Highly flammable liquid and vapour

  Precautionary statement(s)

  P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

  P370 + P378 In case of fire: Use dry powder or dry sand to extinguish.

  P403 + P235 Store in a well-ventilated place. Keep cool.

  Supplemental Hazard Statements none

- **Other hazards** none

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3. Composition/information on ingredients

- Acetyl Propionyl Natural ≥96%

---

4. First aid measures

- **Eye contact**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage**

NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Yellow to yellow-green
• Odor	Penetrating, buttery on dilution
• PH value at 10g/l H_2O	N/A
• Boiling point	110 - 112 °C - lit.
• Flash point	19 °C - open cup
• Melting point	-52 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.952 - 0.962
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

---

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 3.000 mg/kg
  LD50 Dermal - rabbit - > 2.500 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:1224 IMDG:1224 IATA:1224
- **Shipping Name**
  ADR/RID: KETONES, LIQUID, N.O.S. (pentane-2,3-dione)
  IMDG: KETONES, LIQUID, N.O.S. (pentane-2,3-dione)
  IATA: Ketones, liquid, n.o.s. (pentane-2,3-dione)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

---

16. Other information

- Document Number: B-N28410-11
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- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

VANILLA EXTRACT

1. *Identification*

- Chemical name: Vanilla extract
- Synonyms: -
- Molecular Formula: -
- Molecular Weight: -
- CAS No.: 8024-06-4
- FEMA No.: -
- Einecs No.: 232-463-1
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Eye irritation (Category 2)	H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour
H319	Causes serious eye irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental Hazard Statement	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Vanilla extract

---

4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Dark amber to brown
• Odor	Vanilla
• PH value at 10g/l H_2O	N/A
• Boiling point:	N/A
• Flash point:	24.5 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	3.5 %(V)
• Upper explosion limit:	15 %(V)
• Ignition temperature:	425 °C
• Oxidizing properties:	N/A
• Vapor pressure:	59 hPa at 44.3mmHg
• Specific gravity @20 °C:	1.000-1.100

- Solubility in water: Soluble
- Organic solvents: Soluble

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid Heat, flames and sparks.
- Substances to be avoided: Strong oxidizing agents
- Hazardous decomposition: Carbon oxides
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1197 IMDG:1197 IATA: 1197
- **Shipping Name:**
  ADR/RID: EXTRACTS, FLAVOURING, LIQUID(VANILLA EXTRACT)
  IMDG: EXTRACTS, FLAVOURING, LIQUID(VANILLA EXTRACT)
  IATA: Extracts, flavoring, liquid(Vanilla extract)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL BUTYRATE NATURAL

1. *Identification*

- Chemical name: Ethyl butanoate
- Synonyms: -
- Molecular Formula: $C_6H_{12}O_2$
- Molecular Weight: 116.16
- CAS No.: 105-54-4
- FEMA No.: 2427
- Einecs No.: 203-306-4
- FDA: 182.60
- CoE: 264

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish
Supplemental Hazard Statements	None

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Ethyl Butyrate ≥99%

---

4. *First aid measures*

- **Eye contact:**

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Rinse immediately with tap water for 10 minutes open eyelids forcibly;
consult a physician if irritation persists

- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists

- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting:**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Clear liquid
• Color	Colorless
• Odor	Characteristic odour and burning taste
• PH value at 10g/l H_2O	N/A
• Boiling point	120 °C - lit.
• Flash point	26 °C - closed cup
• Melting point	-93 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	17.50 - 79.60 hPa at 20 - 50 °C
• Specific gravity @25°C	0.870-0.877
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided	Oxidizing agents, Bases, acids
• Hazardous decomposition	Carbon dioxide.
• Hazardous	Will not occur.

11. Toxicological information

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- Acute toxicity — LD50 Oral - Rat - male and female - 13,050 mg/kg
  Inhalation: No data available
  LD50 Dermal - Rabbit - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC0 - Leuciscus idus melanotus - 35 mg/l - 48 h LC50 - Leuciscus idus melanotus - 53 mg/l - 48 h
Toxicity to daphnia and other aquatic invertebrates	LC50 - Daphnia magna (Water flea) - 755 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1180 IMDG:1180 IATA:1180
- **Shipping Name**
  ADR/RID: ETHYL BUTYRATE
  IMDG: ETHYL BUTYRATE
  IATA: Ethyl butyrate
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

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- Creation Date Jan. 19, 22
- Revision 11.0
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MATERIAL SAFETY DATA SHEET

ETHYL 2-METHYLBUTYRATE NATURAL

1. *Identification*

- Chemical name: Ethyl 2-Methylbutyrate
- Synonyms: Ethyl-2-methylbutanoate
- Molecular Formula: $C_7H_{14}O_2$
- Molecular Weight: 130.19
- CAS No.: 7452-79-1
- FEMA No.: 2443
- Einecs No.: 231-225-4
- FDA: 172.510
- CoE: 265

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word: Warning

  Hazard statement(s)

  H226: Flammable liquid and vapour

  Precautionary statement(s): none

  Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. *Composition/information on ingredients*

- Ethyl 2-Methylbutyrate ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists

- **Skin contact:**

  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

consult a physician if skin irritation persists

- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

- Technical measures — local exhaust ventilation necessary
  take precautionary measures against electrostatic charging
  processing in closed systems, if possible superposed by inert gas

(e.g. nitrogen).

• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colourless
• Odor	Strong, green-fruity, apple
• PH value at 10g/l H_2O	N/A
• Boiling point	133 °C - lit.
• Flash point	26 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.863-0.870
• Solubility in water	Very slightly soluble in water
• Organic solvents	1 ml in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided	Strong oxidizing agents Strong oxidizing agents, Strong bases
• Hazardous decomposition	Carbon oxides
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.

- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3272 IMDG:3272 IATA:3272
- **Shipping Name**
  ADR/RID: ESTERS, N.O.S. (Ethyl 2-methylbutyrate)
  IMDG: ESTERS, N.O.S. (Ethyl 2-methylbutyrate)
  IATA: Esters, n.o.s. (Ethyl 2-methylbutyrate)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N24430-11
- Creation Date — Jan. 21, 22
- Revision — 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

3,4-HEXANEDIONE

1. *Identification*

- Chemical name 3,4-Hexanedione
- Synonyms Dipropionyl
- Molecular Formula $C_6H_{10}O_2$
- Molecular Weight 114.14
- CAS No. 4437-51-8
- FEMA No. 3168
- Einecs No. 224-651-7
- FDA -
- CoE 2255

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 3,4-Hexanedione ⩾97%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C
Light sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Oily liquid
• Color	Yellow
• Odor	Buttery toasted almond nutty caramel
• pH value at 10g/l H_2O	N/A
• Boiling point	131 °C - lit.
• Flash point	27 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	Soluble
• Organic solvents	Soluble in ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

  ADR/RID:1224 IMDG:1224 IATA:1224

- **Shipping Name**

  ADR/RID: KETONES, LIQUID, N.O.S. (Hexane-3,4-dione)
  IMDG: KETONES, LIQUID, N.O.S. (Hexane-3,4-dione)
  IATA: Ketones, liquid, n.o.s. (Hexane-3,4-dione)

- **Hazard Class**

  ADR/RID:3 IMDG:3 IATA:3

- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number B-D31680-11
- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2,3- HEXANEDIONE NATURAL

1. *Identification*

- Chemical name: Hexane-2,3-dione
- Synonyms: 2,3-Hexanedione; Acetyl-n-butyryl; Methyl propyl diketone
- Molecular Formula: $C_6H_{10}O_2$
- Molecular Weight: 114.14
- CAS No.: 3848-24-6
- FEMA No.: 2558
- Einecs No.: 223-350-8
- FDA: 172.510
- CoE: 152

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3) H226

Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Respiratory system H373

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word: Warning

Hazard statement(s)

H226: Flammable liquid and vapour.

H373: May cause damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.

Precautionary statement(s)

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233: Keep container tightly closed.

P240: Ground and bond container and receiving equipment.

P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242: Use non-sparking tools.

P314: Get medical advice/ attention if you feel unwell.

Supplemental Hazard: none

Statements

- **Other hazards** none

---

3. Composition/information on ingredients

- 2,3-Hexanedione ≥ 95%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING.
  Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Oily liquid
• Color	Yellow
• Odor	Butter-sweet odor
• pH value at 10g/l H_2O	N/A
• Boiling point	128 °C - lit.
• Flash point	28 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.930 – 0.950
• Solubility in water	Slightly soluble in water
• Organic solvents	Soluble in propylene glycol, alcohol, and oils

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - > 5,000 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:1224 IMDG:1224 IATA:1224

- **Shipping Name**

  ADR/RID: KETONES, LIQUID, N.O.S. (Hexane-2,3-dione)

  IMDG: KETONES, LIQUID, N.O.S. (Hexane-2,3-dione)

  IATA: Ketones, liquid, n.o.s. (Hexane-2,3-dione)

- **Hazard Class**

  ADR/RID:3 IMDG:3 IATA:3

- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

---

16. Other information

- Document Number: B-N25580-11
- Creation Date: Jan. 4, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ACETYL ISOVALERYL

1. *Identification*

- Chemical name: 5-Methyl-2,3-Hexanedione
- Synonyms: Acetyl isopentanoyl; Isobutyl methyl diketone; Isobutyl methyl glyoxal; 2-Methyl-4,5-hexanedione
- Molecular Formula: $C_7H_{12}O_2$
- Molecular Weight: 128.17
- CAS No.: 13706-86-0
- FEMA No.: 3190
- Einecs No.: 237-241-8
- FDA: -
- CoE: 11148

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Acetyl Isovaleryl ≥ 98%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid oil
• Color:	Yellowish
• Odor	Butter odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	137 – 138 °C
• Flash point:	33°C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.896 - 0.916
• Solubility in water:	Slightly soluble in water
• Organic solvents:	Miscible with alcohol, propylene glycol, and glycerol

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- UN-no.: 1224
- Shipping Name: KETONES, LIQUID, N.O.S. (5-Methyl-2,3-Hexanedione)
- Hazard Class: 3
- Packing Group: III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D31900-11

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- Creation Date: Jan. 21, 22
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

4-HEXEN-3-ONE

1. *Identification*

- Chemical name: Hexen-4-en-3-one
- Synonyms: 2-Hexen-4-one
- Molecular Formula: $C_6H_{10}O$
- Molecular Weight: 98.15
- CAS No.: 2497-21-4
- FEMA No.: 3352
- Einecs No.: 219-681-2
- FDA: Listed
- CoE: 718

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 4-Hexen-3-one ≥98%(Sum of isomers)

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Pungent, acrid, metallic
• PH value at 10g/l H_2O	N/A
• Boiling point:	135 ~137°C
• Flash point:	34 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.855 - 0.861

- Solubility in water: Slightly soluble
- Organic solvents: Soluble

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - mouse - 780 mg/kg
  Inhalation: no data available
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:1224 IMDG:1224 IATA:1224
- Shipping Name:
  ADR/RID: KETONES, LIQUID, N.O.S. (Hex-4-en-3-one)
  IMDG: KETONES, LIQUID, N.O.S. (Hex-4-en-3-one)
  IATA: Ketones, liquid, n.o.s. (Hex-4-en-3-one)
- Hazard Class:
  ADR/RID: 3 IMDG:3 IATA:3
- Packing Group:
  ADR/RID: III IMDG:III IATA:III

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-D33520-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

SABINENE NATURAL

1. *Identification*

- Chemical name: 4-methylidene-1-propan-2-ylbicyclo[3.1.0]hexane
- Synonyms: Sabinene
- Molecular Formula: $C_{10}H_{16}$
- Molecular Weight: 136.24
- CAS No.: 3387-41-5
- FEMA No.: -
- Einecs No.: 222-212-4
- FDA: -
- CoE: 11018

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. Composition/information on ingredients

- Sabinene ≥ 98%(total of $C_{10}H_{16}$)

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**

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Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form:	Clear liquid
• Color:	Colorless to pale yellow
• Odor	Woody, spicy
• pH value at 10g/l H_2O	N/A
• Boiling point:	163 - 164 °C at 1,013 hPa
• Flash point:	37 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A

- Specific gravity @25°C: 0.840 - 0.860
- Solubility in water: N/A
- Organic solvents: Soluble in alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3295 IMDG:3295 IATA:3295
- **Shipping Name:**
  ADR/RID: HYDROCARBONS,LIQUID,N.O.S. (Thuj-4(10)-ene)
  IMDG: HYDROCARBONS,LIQUID,N.O.S. (Thuj-4(10)-ene)
  IATA: Hydrocarbons, liquid, n.o.s. (Thuj-4(10)-ene)

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- **Hazard Class:**

  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**

  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N22800-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-METHYL-3-FURANTHIOL NATURAL

1. *Identification*

• Chemical name	2-Methyl-3-Furanthiol
• Synonyms	2-Methyl-3-furyl mercaptan
• Molecular Formula	C_5H_6OS
• Molecular Weight	114.16
• CAS No.	28588-74-1
• FEMA No.	3188
• Einecs No.	249-094-7
• FDA	-
• CoE	11678

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 3)	H301

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
Precautionary statement(s)	
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Methyl-3-furanthiol ≥98%

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4. *First aid measures*

- **Eye contact:**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Store under inert gas. Air and light sensitive.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	- Safety glasses
• Hand	- Protective gloves
• Skin	-Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Pale pink to pale orange
• Odor	Aroma of roasted meat
• PH value at 10g/l H_2O	N/A
• Boiling point	57 - 60 °C at 59 hPa - lit.
• Flash point	37 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.102-1.127
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Oral - mouse - 100 mg/kg
• Sensitization	No information available.

- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3071 IMDG:3071 IATA:3071
- **Shipping Name**
  ADR/RID: MERCAPTANS, LIQUID, TOXIC, FLAMMABLE, N.O.S. (2-Methylfuran-3-thiol)
  IMDG: MERCAPTANS, LIQUID, TOXIC, FLAMMABLE, N.O.S. (2-Methylfuran-3-thiol)
  IATA: Mercaptans, liquid, toxic, flammable, n.o.s. (2-Methylfuran-3-thiol)
- **Hazard Class**
  ADR/RID: 6.1(3) IMDG: 6.1(3) IATA: 6.1(3)
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N31880-11
- Creation Date — Jan. 21, 22
- Revision — 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TRANS-2-HEXENAL NATURAL

1. *Identification*

- Chemical name: trans-2-Hexenal
- Synonyms: Leaf aldehyde
- Molecular Formula: $C_6H_{10}O$
- Molecular Weight: 98.14
- CAS No.: 6728-26-3
- FEMA No.: 2560
- Einecs No.: 229-778-1
- FDA: 172.510
- CoE: 748

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Dermal (Category 3)	H311

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H311	Toxic in contact with skin
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ protective clothing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

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Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. Composition/information on ingredients

- T,2-Hexenal ≥98%

---

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

  Recommended storage temperature: 2 - 8 °C

  Light sensitive. Store under inert gas.

  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Clear, liquid
• Color:	Pale yellow
• Odor	Strong, fruity-green, vegetable
• PH value at 10g/l H_2O	N/A
• Boiling point:	47 °C at 23 hPa - lit.
• Flash point:	38 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	9.2 %(V)
• Upper explosion limit:	1.6 %(V)

- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: 13 hPa at 20 °C
- Specific gravity @25℃: 0.841-0.850
- Solubility in water: no data available
- Organic solvents: 1 ml in 1 ml 95% alcohol

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid: Light. Heat, flames and sparks.
- Substances to be avoided: Oxidizing agents, Strong bases, Strong reducing agents
- Hazardous decomposition: Carbon monoxide, carbon dioxide, acrid smoke and fumes
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 780 mg/kg
  LD50 Dermal - rabbit - 600 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1988 IMDG:1988 IATA:1988
- **Shipping Name**
  ADR/RID: ALDEHYDES, FLAMMABLE, TOXIC N.O.S. (Trans-hex-2-enal)
  IMDG: ALDEHYDES, FLAMMABLE, TOXIC N.O.S. (Trans-hex-2-enal)
  IATA: Aldehydes, flammable, toxic, n.o.s. (Trans-hex-2-enal)
- **Hazard Class**
  ADR/RID:3 (6.1) IMDG: 3 (6.1) IATA: 3 (6.1)
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N25600-09
- Creation Date: Jan. 10, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL-2 TETRAHYDROFURAN-3-ONE NATURAL

1. *Identification*

- Chemical name: 4,5-Dihyro-2-Methylfuran-3(2H)-One
- Synonyms: Coffee Furanone; Dihydro-2-methyl-3(2H)-furanone; 2-Methyl-3-oxotetrahydrofuran
- Molecular Formula: $C_5H_8O_2$
- Molecular Weight: 100.12
- CAS No.: 3188-00-9
- FEMA No.: 3373
- Einecs No.: 221-685-4
- FDA: -
- CoE: 2338

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour.

  Precautionary statement(s)

  P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Methyl Tetrahydrofuran-3-one ≥99%

---

4. *First aid measures*

- **Eye contact:**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Bread
• PH value at 10g/l H_2O	N/A
• Boiling point	139 °C - lit.
• Flash point	39 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C	1.034 - 1.045
• Solubility in water	Insoluble
• Organic solvents	Slightly soluble

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - Mouse - 1,860 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Methyltetrahydrofuran-3-one)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Methyltetrahydrofuran-3-one)
  IATA: Flammable liquid, n.o.s (2-Methyltetrahydrofuran-3-one)
- **Hazard Class**
  ADR/RID: 3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-N33730-11
- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ACETIC ACID NATURAL

1. *Identification*

- Chemical name: Acetic Acid
- Synonyms: Ethanoic acid; Ethylic acid; Methanecarboxylic acid; Vinegar acid
- Molecular Formula: $C_2H_4O_2$
- Molecular Weight: 60.05
- CAS No.: 64-19-7
- FEMA No.: 2006
- Einecs No.: 200-580-7
- FDA: 184.1005
- CoE: 2

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Skin corrosion (Sub-category 1A)	H314
Serious eye damage (Category 1)	H318

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER/doctor.

Supplemental Hazard Statements: none

- **Other hazards** **none**

---

3. Composition/information on ingredients

- Acetic Acid ≥99.5%

---

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking.

  Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Moisture sensitive.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Clear, liquid
• Color	Colorless
• Odor	Vinegar odor and taste
• PH value at 10g/l H_2O	2.4 at 60.05 g/l
• Boiling point	117 - 118 °C - lit.
• Flash point	40 °C

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• Melting point	16.2 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	4 %(V)
• Upper explosion limit	19.9 %(V)
• Ignition temperature	485 °C
• Oxidizing properties	N/A
• Vapor pressure	73.3 hPa at 50.0 °C 15.2 hPa at 20.0 °C
• Specific gravity @25°C	1.046-1.049
• Solubility in water	Soluble
• Organic solvents	Soluble

---

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks Note: Use great caution in mixing with water due to heat evolution that causes explosive spattering.
• Substances to be avoided	Metals, strong oxidizing agents, bases,
• Hazardous decomposition	Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 3,310 mg/kg LC50 Inhalation - Mouse - 4 h - 2,819 mg/l
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

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12. Ecological information

• Toxicity	
Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - >1,000 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 48 h

Toxicity to algae	EC50 - Skeletonema costatum - > 1,000 mg/l - 72 h
Toxicity to bacteria	EC5 - Pseudomonas putida - 2,850 mg/l - 16 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2789 IMDG:2789 IATA:2789
- **Shipping Name**
  ADR/RID: ACETIC ACID, GLACIAL
  IMDG: ACETIC ACID, GLACIAL
  IATA: Acetic acid, glacial
- **Hazard Class**
  ADR/RID:8(3) IMDG:8(3) IATA:8(3)
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N20060-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ACETOIN

1. *Identification*

- Chemical name: 3-Hydroxy-2-Butanone
- Synonyms: Dimethylketol; Acetyl Methyl Carbinol
- Molecular Formula: $C_4H_8O_2$
- Molecular Weight: 88.11
- CAS No.: 513-86-0
- FEMA No.: 2008
- Einecs No.: 208-174-1
- FDA: 182.60
- CoE: 749

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Eye Damage (Category 1)	H318

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H318	Causes serious eye damage
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards**: none

---

3. *Composition/information on ingredients*

- Acetoin: ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of ignition- No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Recommended storage temperature: 5 - 15 °C

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid or solid
• Color	Pale yellow to yellow
• Odor	Buttery
• pH value at 10g/l H_2O	N/A
• Boiling point	148 °C - lit.
• Flash point	47 °C - closed cup
• Melting point	15 °C
• Explosive properties	N/A
• Lower explosion limit	1 % (V)
• Upper explosion limit	12.2 % (V)
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	50 hPa at 50 °C 5 hPa at 20 °C
• Specific gravity @25°C	0.995 - 1.019
• Solubility in water	Soluble
• Organic solvents	N/A

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 5,000 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish — LC50 - Leuciscus idus (Golden orfe) - > 2,200 mg/l - 96 h
LC0 - Leuciscus idus (Golden orfe) - 2,200 mg/l - 48 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID:2621 IMDG:2621 IATA:2621

- **Shipping Name**

ADR/RID: ACETYL METHYL CARBINOL
IMDG: ACETYL METHYL CARBINOL
IATA: Acetyl methyl carbinol

- **Hazard Class**

ADR/RID:3 IMDG:3 IATA:3

- **Packing Group**

ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D20080-11
- Creation Date — Jan. 21, 22
- Revision — 11.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

FURFURYL MERCAPTAN

1. *Identification*

- Chemical name: 2-Furanmethanethiol
- Synonyms: Furfuryl Thiol
- Molecular Formula: C_5H_6OS
- Molecular Weight: 114.16
- CAS No.: 98-02-2
- FEMA No.: 2493
- Einecs No.: 202-628-2
- FDA: -
- CoE: 2202

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

  Acute toxicity, Oral (Category 3) H301

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Danger

  Hazard statement(s)

  H226 Flammable liquid and vapour.

  H301 Toxic if swallowed.

  Precautionary statement(s)

  P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Furfuryl Mercaptan ≥98%

---

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Handle and store under inert gas. Air and moisture sensitive. May darken on storage

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Colorless to dark red
• Odor	Coffee
• PH value at 10g/l H_2O	N/A
• Boiling point:	155 °C - lit.
• Flash point:	45 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25° C:	1.124 ~ 1.135
• Solubility in water:	N/A
• Organic solvents:	1 ml in 1 ml 95% ethanol

10. *Stability and reactivity*

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Strong oxidizing agents

- Hazardous decomposition: Carbon oxides
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Intraperitoneal - mouse - 100 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1228 IMDG:1228 IATA:1228
- **Shipping Name**
  ADR/RID: MERCAPTANS, LIQUID, FLAMMABLE, TOXIC, N.O.S. (2-Furylmethanethiol)
  IMDG: MERCAPTANS, LIQUID, FLAMMABLE, TOXIC, N.O.S. (2-Furylmethanethiol)
  IATA: Mercaptans, liquid, flammable, toxic, n.o.s. (2-Furylmethanethiol)
- **Hazard Class**
  ADR/RID:3(6.1) IMDG: 3(6.1) IATA: 3(6.1)
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D24930-11
- Creation Date: Jan. 21, 22

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- Revision: 11.0
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MATERIAL SAFETY DATA SHEET

ALLYL ISOTHIOCYANATE

1. *Identification*

- Chemical name: Allyl Isothiocyanate
- Synonyms: Oil of mustard
- Molecular Formula: C_4H_5NS
- Molecular Weight: 99.16
- CAS No.: 8007-40-7; 57-06-7
- FEMA No.: 2034
- Einecs No.: 232-358-0; 200-309-2
- FDA: 182.20 / 172.510
- CoE: 2110

---

2. *HAZARDS IDENTIFICATION*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 3)	H301
Acute toxicity, Inhalation (Category 3)	H331
Acute toxicity, Dermal (Category 2)	H310
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Respiratory sensitisation (Category 1)	H334
Skin sensitisation (Category 1)	H317
Acute aquatic toxicity (Category 1)	H400
Chronic aquatic toxicity (Category 1)	H410

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour
H301 + H331	Toxic if swallowed or if inhaled
H310	Fatal in contact with skin

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H410	Very toxic to aquatic life with long lasting effects
Precautionary statement(s)	
P261	Avoid breathing vapours.
P273	Avoid release to the environment
P280	Wear protective gloves/ protective clothing.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P302 + P350	IF ON SKIN: Gently wash with plenty of soap and water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards**
  Lachrymator.

  Vesicant., Lachrymator

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3. *Composition/information on ingredients*

- Allyl Isothiocyanate ≥ 99%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**

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Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas

(e.g. nitrogen).

• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to brown liquid
• Odor	Sharp, pungent taste.
• pH value at 10g/l H_2O	N/A
• Boiling point:	150 °C
• Flash point:	46 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.008 - 1.019
• Solubility in water:	N/A
• Organic solvents:	N/A

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

Acute toxicity	LD50 Oral - rat - 112 mg/kg Inhalation: Irritating to respiratory system. LD50 Dermal - rabbit - 88 mg/kg
Sensitization	No information available.
Mutagenicity	No information available.
Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. TRANSPORT INFORMATION

- **UN number**
  ADR/RID: 1545 IMDG: 1545 IATA: 1545
- **UN proper shipping name**
  ADR/RID: ALLYL ISOTHIOCYANATE, STABILIZED
  IMDG: ALLYL ISOTHIOCYANATE, STABILIZED
  IATA: Allyl isothiocyanate, stabilized
  Passenger Aircraft: Not permitted for transport
- **Transport hazard class(es)**
  ADR/RID: 6.1 (3) IMDG: 6.1 (3) IATA: 6.1 (3)
- **Packaging group**
  ADR/RID: II IMDG: II IATA: II

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D20340-11

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- Creation Date: Jan. 21, 22
- Revision: 11.0
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MATERIAL SAFETY DATA SHEET

ETHYL LACTATE NATURAL

1. *Identification*

- Chemical name: Ethyl 2-hydroxypropanoate
- Synonyms: Ethyl Lactate; Ethyl alpha-hydroxypropionate
- Molecular Formula: $C_5H_{10}O_3$
- Molecular Weight: 118.13
- CAS No.: 97-64-3
- FEMA No.: 2440
- Einecs No.: 202-598-0
- FDA: 172.510
- CoE: 371

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Specific target organ toxicity - single exposure (Category 3)	H335
Serious eye damage (Category 1)	H318

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word: Danger

Hazard statement(s)

H226	Flammable liquid and vapour
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- Ethyl Lactate Natural ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**

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Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colourless
• Odor	Light ethereal, buttery odour
• pH value at 10g/l H_2O	N/A
• Boiling point (ºC)	154 °C - lit.
• Flash point (ºC)	46 °C - closed cup
• Melting point (ºC)	-26 °C
• Explosive properties	N/A
• Lower explosion limit	1.5%(v)
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	3 hPa at 20 °C
• Specific gravity @25°C	1.029~1.032
• Solubility	Miscible in water and alcohol

---

10. Stability and reactivity

- Chemical Stability — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 8,200 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Danio rerio (zebra fish) - 320 mg/l - 96 h mortality NOEC - Danio rerio (zebra fish) - 180 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 560 mg/l - 48 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1192 IMDG:1192 IATA:1192
- **Shipping Name**
  ADR/RID: ETHYL LACTATE
  IMDG: ETHYL LACTATE
  IATA: Ethyl lactate
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N24400-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

1,4 –CINEOLE NATURAL

1. *Identification*

- Chemical name 1-Methyl-4-(1-Methylethyl)-7-Oxabicyclo[2.2.1]Heptane
- Synonyms 1,4-Epoxy-p-Menthane; Isocineole
- Molecular Formula $C_{10}H_{18}O$
- Molecular Weight 154.25
- CAS No. 470-67-7
- FEMA No. 3658
- Einecs No. 207-428-9
- FDA 172.510
- CoE 11225

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 1,4-Cineole ≥ 92%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Mobile liquid
• Color	Colorless
• Odor	Camphor like aroma
• pH value at 10g/l H_2O	N/A
• Boiling point	65 °C at 21 hPa - lit.
• Flash point	47 °C - closed cup
• Melting point	-46 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.890 ~ 0.910
• Solubility in water	Insoluble
• Organic solvents	Soluble in ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Oral - rat - 3,100 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.

- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (1-Methyl-4-(1-methylethyl)-7-oxabicy clo[2.2.1] heptane)
  IMDG: FLAMMABLE LIQUID, N.O.S. (1-Methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1] heptane)
  IATA: Flammable liquid, n.o.s. (1-Methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N36580-11
- Creation Date — Jan. 21, 22
- Revision — 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

EUCALYPTUS OIL 80%

1. *Identification*

- Botanical name: Eucalyptus Globulus Labille
- Synonyms: Eucalyptus Oil Globulus
- CAS No.: 8000-48-4
- FEMA No.: 2466
- Einecs No.: 283-406-2
- FDA: 172.510
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
Precautionary statement(s)	
P280	Wear protective gloves.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 1,8-cineole ≥80%

---

4. *First aid measures*

- **Eye contact:**

-Rinse immediately with tap water for 10 minutes open eyelids forcibly;

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-consult a physician if irritation persists

- **Skin contact:**

  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

  -consult a physician if skin irritation persists

- **Inhalation:**

  -Remove from exposure and move to fresh air immediately.

  -Get medical aid.

- **After ingestion:**

  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

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• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Characteristic, aromatic, somewhat camphoraceous odor
• PH value at 10g/l H_2O	N/A
• Boiling point:	N/A
• Flash point:	N/A
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @20°C:	0.903 ~ 0.925
• Solubility in water:	N/A
• Organic solvents:	Soluble in alcohol.

10. Stability and reactivity

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Strong oxidizing agents
• Hazardous decomposition:	Carbon monoxide, Carbon dioxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Dermal - rabbit - > 5,000 mg/kg

- Sensitization — No information available
- Mutagenicity — No information available
- Other Studies — No information available

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name:**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (Eucalyptus globulus, ext.)
  IMDG: FLAMMABLE LIQUID, N.O.S. (Eucalyptus globulus, ext.)
  IATA: Flammable liquid, n.o.s. (Eucalyptus globulus, ext.)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-E24661-11
- Creation Date: Jan. 21, 22
- Revision: 11.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

EUCALYPTOL NATURAL

1. *Identification*

- Chemical name 1,3,3-Trimethyl-2-Oxabicyclo[2.2.2]Octane
- Synonyms 1,8-Cineole; Eucalyptol
- Molecular Formula $C_{10}H_{18}O$
- Molecular Weight 154.25
- CAS No. 470-82-6
- FEMA No. 2465
- Einecs No. 207-431-5
- FDA 172.510
- CoE 182

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour.

  Precautionary statement(s)

  P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

  P403 + P235 Store in a well-ventilated place. Keep cool.

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Eucalyptol ≥ 99%

---

4. *First aid measures*

- **Eye contact:**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless
• Odor	Camphoraceous; pungent, cooling taste
• pH value at 10g/l H_2O	N/A
• Boiling point	176 - 177 °C
• Flash point	49 °C - closed cup
• Melting point	1 - 2 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.921 – 0.924
• Solubility in water	N/A
• Organic solvents	1 ml in 5 ml 60% ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Oral - rat - 2,480 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish — LC50 - Pimephales promelas (fathead minnow) - 102 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID: 1993 IMDG:1993 IATA:1993

- **Shipping Name**

ADR/RID: FLAMMABLE LIQUID, N.O.S. (Cineole)
IMDG: FLAMMABLE LIQUID, N.O.S. (Cineole)
IATA: Flammable liquid, n.o.s. (Cineole)

- **Hazard Class**

ADR/RID:3 IMDG:3 IATA:3

- **Packing Group**

ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

no data available

- **Chemical Safety Assessment**

no data available

16. Other information

- Document Number — B-N24650-11
- Creation Date — Jan. 21, 22
- Revision — 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-METHYL TETRAHYDROFURAN-3-THIOL NATURAL

1. *Identification*

- Chemical name: 2-Methyl-Tetrahydrofuran-3-Thiol
- Synonyms: -
- Molecular Formula: $C_5H_{10}OS$
- Molecular Weight: 118.20
- CAS No.: 57124-87-5
- FEMA No.: 3787
- Einecs No.: 260-572-4
- FDA: -
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- **Other hazards**

Stench

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3. *Composition/information on ingredients*

- 2-Methyl-Tetrahydrofuran-3-Thiol ≥ 98%(sum of isomers)

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Clear liquid
• Color	Colorless
• Odor	Roasted meat, sulfurous onion
• pH value at 10g/l H_2O	N/A
• Boiling point	160 - 168 °C - lit.
• Flash point	51 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.042 – 1.049
• Solubility in water	Insoluble
• Organic solvents	Soluble in ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Methyltetrahydrofuran-3-thiol)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Methyltetrahydrofuran-3-thiol)
  IATA: Flammable liquid, n.o.s. (2-Methyltetrahydrofuran-3-thiol)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-N37870-11
- Creation Date — Jan. 21, 22
- Revision — 11.0

No. 36, Longmen Road, Haicang Xinyang Industrial Zone, Xiamen 361026, China
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- Disclaimer

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MATERIAL SAFETY DATA SHEET

5-METHYL-2-HEPTEN-4-ONE NATURAL

1. *Identification*

- Chemical name: 5-Mehtylhept-2-en-4-one
- Synonyms: 5-Methyl-2-hepten-4-one; Filbert heptenone; Filbertone; Hazeltone
- Molecular Formula: $C_8H_{14}O$
- Molecular Weight: 126.19
- CAS No.: 81925-81-7
- FEMA No.: 3761
- Einecs No.: -
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

  Flammable liquids (Category 3) H226

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

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3. Composition/information on ingredients

- 5-Mehtylhept-2-en-4-one ≥ 98%(sum of isomers)

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Hazelnut, metallic, buttey odour
• pH value at 10g/l H_2O	N/A
• Boiling point (°C):	170 °C - lit.
• Flash point (°C):	52.22 °C - closed cup
• Melting point (°C):	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.845 - 0.852
• Solubility	Slightly soluble in water; soluble in oils; miscible in alcohol

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID:1224 IMDG:1224 IATA:1224
- **Shipping Name:**
  ADR/RID: KETONES, LIQUID, N.O.S. (5-Methyl-2-hepten-4-one)
  IMDG: KETONES, LIQUID, N.O.S. (5-Methyl-2-hepten-4-one)
  IATA: Ketones, liquid, n.o.s. (5-Methyl-2-hepten-4-one)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Quality defines a brand, reputation builds an alliance.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N37610-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 6 -DIMETHYL PYRAZINE NATURAL

1. *Identification*

- Chemical name 2,6-Dimethylpyrazine
- Synonyms m-Dimethylpyrazine
- Molecular Formula $C_6H_8N_2$
- Molecular Weight 108.14
- CAS No. 108-50-9
- FEMA No. 3273
- Einecs No. 203-589-4
- FDA -
- CoE 2211

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable solids (Category 2)	H228
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Serious eye damage (Category 1)	H318
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Danger
Hazard statement(s)	
H228	Flammable solid
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	Avoid breathing dust.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard	none

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Statements

- **Other hazards** none

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3. Composition/information on ingredients

- 2,6-Dimethylpyrazine ≥ 98%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of

ignition- No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Lumpy crystals
• Color	White to yellow
• Odor	Nutty, coffee
• pH value at 10g/l H_2O	N/A
• Boiling point	154 °C - lit.
• Flash point	53 °C - closed cup
• Melting point	35 ~ 45 ℃
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	Soluble in water
• Organic solvents	Soluble in organic solvents; very soluble in alcohol

---

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 880 mg/kg
  LD50 Intraperitoneal - mouse - 1,080 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN numbr**
  ADR/RID:1325 IMDG:1325 IATA:1325
- **Shipping Name**
  ADR/RID: FLAMMABLE SOLID, ORGANIC, N.O.S. (2,6-Dimethylpyrazine)
  IMDG: FLAMMABLE SOLID, ORGANIC, N.O.S. (2,6-Dimethylpyrazine)
  IATA: Flammable solid, organic, n.o.s. (2,6-Dimethylpyrazine)
- **Hazard Class**
  ADR/RID:4.1 IMDG:4.1 IATA:4.1
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

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- Document Number B-N32730-11
- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 5 -DIMETHYL PYRAZINE NATURAL

1. *Identification*

- Chemical name 2,5-Dimethylpyrazine
- Synonyms p-Dimethylpyrazine
- Molecular Formula $C_6H_8N_2$
- Molecular Weight 108.14
- CAS No. 123-32-0
- FEMA No. 3272
- Einecs No. 204-618-3
- FDA -
- CoE 2210

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- 2,5-Dimethylpyrazine ≥ 95%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  hygroscopic

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Earth, potato
• pH value at 10g/l H_2O	N/A
• Boiling point	155 °C - lit.
• Flash point	53 °C
• Melting point	12 ~ 17° C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity	0.980 – 1.000
• Solubility in water	N/A
• Organic solvents	Soluble

10. *Stability and reactivity*

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 1.020 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2,5-Dimethyl pyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2,5-Dimethyl pyrazine)
  IATA: Flammable liquid, n.o.s. (2,5-Dimethyl pyrazine)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N32720-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 3-DIMETHYL PYRAZINE

1. *Identification*

- Chemical name 2,3-Dimethyl Pyrazine
- Synonyms 2,3-Dimethyl-1,4-diazine
- Molecular Formula $C_6H_8N_2$
- Molecular Weight 108.14
- CAS No. 5910-89-4
- FEMA No. 3271
- Einecs No. 227-630-0
- FDA -
- CoE 11323

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Serious eye damage (Category 1)	H318
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard	none

Statements

- **Other hazards** none

---

3. Composition/information on ingredients

- 2,3-Dimethylpyrazine ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Nutty, cocoa
• pH value at 10g/l H_2O	N/A
• Boiling point	156 °C at 1,013 hPa
• Flash point	54 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.000-1.022
• Solubility	1 ml in 1 ml 95% ethanol

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10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 613 mg/kg
  LD50 Intraperitoneal - mouse - 1,390 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2,3-Dimethylpyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2,3-Dimethylpyrazine)
  IATA: Flammable liquid, n.o.s. (2,3-Dimethylpyrazine)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

Quality defines a brand, reputation builds an alliance.

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- Document Number B-D32710-11
- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 3, 5-TRIMETHYL PYRAZINE NATURAL

1. *Identification*

- Chemical name: Trimethylpyrazine
- Synonyms: 2,3,5-Trimethyl-1,4-diazine
- Molecular Formula: $C_7H_{10}N_2$
- Molecular Weight: 122.17
- CAS No.: 14667-55-1
- FEMA No.: 3244
- Einecs No.: 238-712-0
- FDA: -
- CoE: 735

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- 2,3,5-trimethyl pyrazine ≥99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Baked potato, peanut
• PH value at 10g/l H_2O	N/A
• Boiling point	171 - 172 °C - lit.
• Flash point	54 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.970-0.980
• Solubility in water	Soluble
• Organic solvents	1 ml in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 806 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG;1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2,3,5-Trimethylpyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2,3,5-Trimethylpyrazine)
  IATA: Flammable liquid, n.o.s. (2,3,5-Trimethylpyrazine)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-N32440-11
- Creation Date — Jan. 21, 22

- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

T,2-HEXEN-1-OL NATURAL

1. *Identification*

- Chemical name: trans-2-Hexen-1-ol
- Synonyms: -
- Molecular Formula: $C_6H_{12}O$
- Molecular Weight: 100.16
- CAS No.: 928-95-0
- FEMA No.: 2562
- Einecs No.: 213-191-2
- FDA: 172.510
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and otherignition sources. No smoking.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- trans-2-Hexen-1-ol ≥97%

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4. *First aid measures*

- **Eye contact:**

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-Rinse immediately with tap water for 10 minutes open eyelids forcibly;

-consult a physician if irritation persists

- **Skin contact:**

-Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

-consult a physician if skin irritation persists

- **Inhalation:**

-Remove from exposure and move to fresh air immediately.

-Get medical aid.

- **Ingestion:**

-If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

-Get medical aid. induce vomiting.

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5. Fire-fighting measures

- **General Information:**

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

Cool endangered containers with water spray ;Containers may explode when heated.

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6. Accidental release measures

- **General Information:**

Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature: 2 - 8 °C

Store under inert gas.

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Clear, liquid
• Color:	Light yellow
• Odor	strong, fruity-green
• PH value at 10g/l H_2O	N/A
• Boiling point:	158 - 160 °C - lit.
• Flash point:	54 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.839-0.844
• Solubility in water:	N/A
• Organic solvents:	Soluble

10. Stability and reactivity

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Strong oxidizing agents, Strong acids
• Hazardous decomposition:	Carbon oxides

- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 3,500 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1987 IMDG:1987 IATA：1987
- **Shipping Name:**
  ADR/RID: ALCOHOLS, N.O.S. (trans-Hex-2-en-1-ol)
  IMDG: ALCOHOLS, N.O.S. (trans-Hex-2-en-1-ol)
  IATA: Alcohols, n.o.s. (trans-Hex-2-en-1-ol)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N25620-11
- Creation Date: Jan. 13, 22
- Revision: 11.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

PROPIONIC ACID NATURAL

1. *Identification*

- Chemical name: Propanoic acid
- Synonyms: -
- Molecular Formula: $C_3H_6O_2$
- Molecular Weight: 74.08
- CAS No.: 79-09-4
- FEMA No.: 2924
- Einecs No.: 201-176-3
- FDA: 178.10/184.10
- CoE: 3

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Skin corrosion (Category 1B)	H314
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word: Danger

Hazard statement(s)

H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P403 + P235	Store in a well-ventilated place. Keep cool.
Supplemental Hazard Statements	none

- **Other hazards**

  Rapidly absorbed through skin

---

3. *Composition/information on ingredients*

- Propionic Acid Natural ≥99.5%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Clear oily liquid
• Color	Colorless
• Odor	Slightly pungent, rancid odour
• PH value at 10g/l H_2O	2.5 at 100g/L at 20°C
• Boiling point	141°C -lit
• Flash point	54°C
• Melting point	-24 °C
• Explosive properties	N/A
• Lower explosion limit	2.9%(V)
• Upper explosion limit	12.1%(V)
• Ignition temperature	513 °C
• Oxidizing properties	N/A
• Vapor pressure	3.2 hPa at 20°C
• Specific gravity @25°C	0.990 ~ 0.995
• Solubility in water	Soluble

- Organic solvents — Soluble

10. Stability and reactivity

- Chemical Stability — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - Rat - male and female - 3,455.1 mg/kg
  LC50 Inhalation - Rat - male and female - 4 h - > 20 mg/l
  LD50 Dermal - Rat - female - 3,235 mg/kg
  LD50 Parenteral - Rat - 3,500 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity
  Toxicity to fish — LC50 - Oncorhynchus mykiss (rainbow trout) - 51.0 - 73.2 mg/l - 96 h
  Toxicity to daphnia and other aquatic invertebrates — EC50 - Daphnia magna (Water flea) - 21.0 - 24.6 mg/l - 48 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3463 IMDG:3463 IATA:3463
- **Shipping Name**
  ADR/RID: PROPIONIC ACID
  IMDG: PROPIONIC ACID
  IATA: Propionic acid
- **Hazard Class**
  ADR/RID:8(3) IMDG:8(3) IATA:8(3)

- **Packing Group**

  ADR/RID:II IMDG:II IATA:II

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number B-N29240-11
- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

NATURAL ACETOL

1. *Identification*

- Chemical name: 1-Hydroxypropan-2-one solution
- Synonyms: Acetol solution; Acetone Alcohol solution; Acetyl Carbinol solution; Hydroxy Acetone solution
- Molecular Formula: $C_3H_6O_2$
- Molecular Weight: 74.08
- CAS No.: 116-09-6
- FEMA No.: 4462
- Einecs No.: 204-124-8
- FDA: Listed
- CoE: 11101

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Flammable liquids (Category 3) H226

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H226 Flammable liquid and vapour

  Precautionary statement(s)

  P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. Composition/information on ingredients

- Acetol ≥ 95%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must

be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature 2 - 8 °C
hygroscopic Store under inert gas. Air sensitive.
Storage class (TRGS 510): Flammable liquids

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Clear colorless to yellow
• Odor	Pungent, sweet-caramellic, somewhat choking etheral aroma
• pH value at 10g/l H_2O	3.4 at 50 g/l at 20 °C (68 °F)
• Boiling point:	145 - 146 °C - lit
• Flash point:	56 °C - closed cup
• Melting point:	-17 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	3 %(V)
• Upper explosion limit:	14.9%(V)
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	7.5 hPa (5.6 mmHg) at 20 °C (68 °F)
• Specific gravity @25° C:	1.065-1.075
• Solubility in water:	Soluble
• Organic solvents:	Soluble in ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - Rat - 2,200 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:1224 IMDG:1224 IATA:1224
- **Shipping Name:**
  ADR/RID: KETONES, LIQUID, N.O.S. (Hydroxyacetone)
  IMDG: KETONES, LIQUID, N.O.S. (Hydroxyacetone)
  IATA: Ketones, liquid, n.o.s. (Hydroxyacetone)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B- N44620-11
- Creation Date: Dec. 3, 15
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TEA TREE OIL

1. *Identification*

- Botanical name: Melaleuca alternifolia
- Synonyms: Tea Tree Oil
- CAS No.: 68647-73-4; 85085-48-9
- FEMA No.: 3902
- Einecs No.: 285-377-1
- FDA: -
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Tea Tree Oil

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4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**

Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Pale to light yellow
• Odor	Nutmeg pine warm spicy terpene
• PH value at 10g/l H_2O	N/A
• Boiling point:	165 °C – lit.
• Flash point:	57-60°C

- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 0.888 – 0.909
- Solubility in water: Insoluble
- Organic solvents: Soluble

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10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid Light.
- Substances to be avoided: Strong oxidizing agents
- Hazardous decomposition: No information available
- Hazardous Will not occur.

---

11. Toxicological information

- Acute toxicity LD50 Oral - rat - 1.900 mg/kg
  Inhalation: no data available
  LD50 Dermal - rabbit - 5.000 mg/kg
- Sensitization No information available
- Mutagenicity No information available
- Other Studies See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name:**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (Tea tree oil)
  IMDG: FLAMMABLE LIQUID, N.O.S. (Tea tree oil)
  IATA: Flammable liquid, n.o.s. (Tea tree oil)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B- E39020-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ISOBUTYL THIAZOLE

1. *Identification*

- Chemical name: 2-Isobutyl Thiazole
- Synonyms: -
- Molecular Formula: $C_9H_{11}NS$
- Molecular Weight: 141.24
- CAS No.: 18640-74-9
- FEMA No.: 3134
- Einecs No.: 242-470-1
- FDA: 172.515
- CoE: 11618

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statement	none

- **Other hazards** none

---

3. Composition/information on ingredients

- 2-Isobutyl Thiazole ≥99.0%

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4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of

electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Tomato leaves
• PH value at 10g/l H_2O	N/A
• Boiling point:	180 °C - lit.
• Flash point:	58 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.993-0.999
• Solubility in water:	Slightly soluble
• Organic solvents:	Soluble

10. *Stability and reactivity*

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Strong oxidizing agents

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- Hazardous decomposition: Carbon oxides
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA: 1993
- **Shipping Name:**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Isobutylthiazol)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Isobutylthiazol)
  IATA: Flammable liquid, n.o.s. (2-Isobutylthiazol)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D31340-11
- Creation Date: Jan. 21, 22

- Revision: 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ETHYL-5 OR 6-METHYL PYRAZINE

1. *Identification*

- Chemical name: 2-Ethyl-5 or 6-Methylpyrazine
- Synonyms: 2-Ethyl-5 or 6-Methyl-1,4-Diazine; 2-Methyl-5 or 6-Ethylpyrazine
- Molecular Formula: $C_7H_{10}N_2$
- Molecular Weight: 122.17
- CAS No.: 36731-41-6 for mixture
  13360-64-0 for 2-Ethyl-5-Methylpyrazine
  13925-03-6 for 2-Ethyl-6-Methylpyrazine
- FEMA No.: 3154 for 2-Ethyl-5-Methylpyrazine
  3919 for 2-Ethyl-6-Methylpyrazine
- Einecs No.: 253-175-2 for mixture
  236-416-6 for 2-Ethyl-5-Methylpyrazine
  237-692-0 for 2-Ethyl-6-Methylpyrazine
- FDA: Listed
- CoE: 728 for 2-Ethyl-5-Methylpyrazine
  11331 for 2-Ethyl-6-Methylpyrazine

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

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Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Ethyl-5 or 6-Methylpyrazine ≥ 99% (sum of isomers)

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to brown
• Odor	Nutty, roasted, grassy odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	57 °C at 13 hPa
• Flash point:	58.9 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.960 - 0.970
• Solubility in water:	Soluble
• Organic solvents:	Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name:**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-5(or6)-methylpyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-5(or6)-methylpyrazine)
  IATA: Flammable liquid, n.o.s. (2-Ethyl-5(or6)-methylpyrazine)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

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- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

---

16. Other information

- Document Number: B-D31541-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ETHYL-5 OR 6-METHYL PYRAZINE

1. *Identification*

- Chemical name: 2-Ethyl-5 or 6-Methylpyrazine
- Synonyms: 2-Ethyl-5 or 6-Methyl-1,4-Diazine; 2-Methyl-5 or 6-Ethylpyrazine
- Molecular Formula: $C_7H_{10}N_2$
- Molecular Weight: 122.17
- CAS No.: 36731-41-6 for mixture
  13360-64-0 for 2-Ethyl-5-Methylpyrazine
  13925-03-6 for 2-Ethyl-6-Methylpyrazine
- FEMA No.: 3154 for 2-Ethyl-5-Methylpyrazine
  3919 for 2-Ethyl-6-Methylpyrazine
- Einecs No.: 253-175-2 for mixture
  236-416-6 for 2-Ethyl-5-Methylpyrazine
  237-692-0 for 2-Ethyl-6-Methylpyrazine
- FDA: Listed
- CoE: 728 for 2-Ethyl-5-Methylpyrazine
  11331 for 2-Ethyl-6-Methylpyrazine

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

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www.bestally.com.cn

Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Ethyl-5 or 6-Methylpyrazine ≥ 99% (sum of isomers)

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to brown
• Odor	Nutty, roasted, grassy odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	57 °C at 13 hPa
• Flash point:	58.9 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.960 - 0.970
• Solubility in water:	Soluble
• Organic solvents:	Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name:**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-5(or6)-methylpyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-5(or6)-methylpyrazine)
  IATA: Flammable liquid, n.o.s. (2-Ethyl-5(or6)-methylpyrazine)
- **Hazard Class:**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

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- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

---

16. Other information

- Document Number: B-D31541-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ISOPROPYL-4-METHYL THIAZOLE

1. *Identification*

• Product name	Isopropyl methylthiazole-2,4
• Synonyms	4-Methyl-2-isopropylthiazole
• Molecular Formula	$C_7H_{11}NS$
• Molecular Weight	141.23
• CAS No.	15679-13-7
• FEMA No.	3555
• Einecs No.	239-758-4
• FDA	-
• CoE	-

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Isopropyl methylthiazole-2,4 ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to orange liquid(may darken on standing)
• Odor	Green, herbaceous, vegetable, earthy odor
• pH value at 10g/l H_2O	N/A
• Boiling point (ºC)	92 °C at 67 hPa - lit.
• Flash point (ºC)	58 °C - closed cup
• Melting point (ºC)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.001~1.006
• Solubility	Slightly soluble in water; Miscible in fats and alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.

- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:1993 IMDG:1993 IATA:1993
- Shipping Name
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Isopropyl-4-methylthiazole)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Isopropyl-4-methylthiazole)
  IATA: Flammable liquid, n.o.s. (2-Isopropyl-4-methylthiazole)
- Hazard Class
  ADR/RID:3 IMDG:3 IATA:3
- Packing Group
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-D35550-11
- Creation Date — Jan. 21, 22
- Revision — 11.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

TRANS-2-HEXENYL ACETATE NATURAL

1. *Identification*

- Chemical name: Hex-2-enyl acetate
- Synonyms: 1-Acetoxy-2-hexene; Hex-2-enyl acetate; 2-Hexenyl ethanoate
- Molecular Formula: $C_8H_{14}O_2$
- Molecular Weight: 142.2
- CAS No.: 2497-18-9
- FEMA No.: 2564
- Einecs No.: 219-680-7
- FDA: 172.510
- CoE: 643

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- 2-Hexenyl acetate natural ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which areopened must be carefully resealed and kept upright to prevent leakage

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Powerful green, fruity aroma
• pH value at 10g/l H_2O	N/A
• Boiling point (ºC):	165 - 166 °C - lit.
• Flash point (ºC):	58 °C - closed cup
• Melting point (ºC):	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.890~0.897
• Solubility	Very slightly soluble in water; 1 ml in 1 ml 95% alc

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 5.000 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3272 IMDG: 3272 IATA:3272
- **UN proper shipping Name:**
  ADR/RID: ESTERS, N.O.S. (trans-Hex-2-enyl acetate)
  IMDG: ESTERS, N.O.S. (trans-Hex-2-enyl acetate)
  IATA: Esters, n.o.s. (trans-Hex-2-enyl acetate)
- **Hazard Class:**
  ADR/RID:3 IMDG: 3 IATA:3
- **Packing Group:**
  ADR/RID:III IMDG: III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N25640-11
- Creation Date: Jan. 21, 22
- Revision: 11.0

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MATERIAL SAFETY DATA SHEET

2-ETHYL-3-METHYL PYRAZINE

1. *Identification*

• Chemical name	2-Ethyl-3-Methylpyrazine
• Synonyms	2-Ethyl-3-Methyl-1,4-Diazine; 2-Methyl-3-Ethylpyrazine
• Molecular Formula	$C_7H_{10}N_2$
• Molecular Weight	122.17
• CAS No.	15707-23-0
• FEMA No.	3155
• Einecs No.	239-799-8
• FDA	-
• CoE	548

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards**

Stench

3. Composition/information on ingredients

- 2-Ethyl-3-Methylpyrazine ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

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- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form	Liquid
• Color	Colourless to slightly yellow
• Odor	Strong raw potato odour
• pH value at 10g/l H_2O	N/A
• Boiling point	57 °C at 13 hPa - lit.
• Flash point	58.9 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.978 – 0.988
• Solubility in water	Soluble
• Organic solvents	Soluble

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 600 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-3-methylpyrazine)
  IMDG: FLAMMABLE LIQUID, N.O.S. (2-Ethyl-3-methylpyrazine)
  IATA: Flammable liquid, n.o.s. (2-Ethyl-3-methylpyrazine)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

- This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
  Safety, health and environmental regulations/legislation specific for the substance or mixture
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number B-D31550-11

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- Creation Date Jan. 21, 22
- Revision 11.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

FURFURAL NATURAL

1. *Identification*

- Chemical name 2-Furaldehyde
- Synonyms Furfural
- Molecular Formula $C_5H_4O_2$
- Molecular Weight 96.08
- CAS No. 98-01-1
- FEMA No. 2489
- Einecs No. 202-627-7
- FDA 175.105
- CoE 2014

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 3)	H301
Acute toxicity, Inhalation (Category 2)	H330
Acute toxicity, Dermal (Category 4)	H312
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Carcinogenicity (Category 2)	H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H301	Toxic if swallowed.
H312	Harmful in contact with skin
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
Precautionary statement(s)	
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing/ eye protection/ face

	protection.
P301 + P330 + P331 + P310	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/ doctor.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
Supplemental Hazard Statements	none

- **Other hazards**

  Photosensitizer.

---

3. *Composition/information on ingredients*

- Furfural ≥98%

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4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists

- **Skin contact:**

  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists

- **Inhalation:**

  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**

  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

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- **Special method of fire-fighting**

  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Oily,liquid
• Color	Colorless to yellow oily liquid, turns red-brown on long storage
• Odor	Sweet, bready
• PH value at 10g/l H_2O	N/A

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• Boiling point	162 °C - lit.
• Flash point	61.7 °C - closed cup
• Melting point	-36 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	2.1 %(V)
• Upper explosion limit	19.3 %(V)
• Ignition temperature	315 °C
• Oxidizing properties	N/A
• Vapor pressure	18.0 hPa at 55 °C 2.3 hPa at 20 °C
• Specific gravity @25°C	1.154-1.158
• Solubility in water	Soluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Air Avoid moisture. Light. Heat, flames and sparks.
• Substances to be avoided	Oxidizing agents, Strong acids
• Hazardous decomposition	Carbon monoxide, carbon dioxide
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - male - 145 - 204 mg/kg LD50 Oral - rat - female - 90 - 119 mg/kg LC50 Inhalation - rat - male and female - 4 h - > 0.54 - < 1.63 mg/l LD50 Dermal - rabbit - > 2,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

• Toxicity	
Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 32 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 29 mg/l - 24 h
Toxicity to algae	EC50 - other microorganisms - 570 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID:1199 IMDG:1199 IATA:1199
- **Shipping Name**
  ADR/RID: FURALDEHYDES
  IMDG: FURALDEHYDES
  IATA: Furaldehydes
- **Hazard Class**
  ADR/RID:6.1(3) IMDG: 6.1(3) IATA: 6.1(3)
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-N24890-11
- Creation Date — Jan. 13, 22
- Revision — 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 6-DIMENTHYL-5-HEPTENAL NATURAL

1. *Identification*

- Chemical name 2,6-Dimethylhept-5-en-1-al
- Synonyms Melonal
- Molecular Formula $C_9H_{16}O$
- Molecular Weight 140.23
- CAS No. 106-72-9
- FEMA No. 2389
- Einecs No. 203-427-2
- FDA 172.510
- CoE 2006

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
Precautionary statement(s)	
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Melonal ≥85%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;

consult a physician if irritation persists

- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists

- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Pale yellow
• Odor	Melon
• PH value at 10g/l H_2O	N/A
• Boiling point	116 - 124 °C at 133 hPa - lit.
• Flash point	61 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.848~0.854
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	No information available
• Substances to be avoided	Strong oxidizing agents, Strong bases
• Hazardous decomposition	Carbon oxides
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - > 5,000 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N23890-10
- Creation Date — Jun. 7, 21
- Revision — 10.0

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MATERIAL SAFETY DATA SHEET

2-OCTEN-4-ONE

1. *Identification*

- Chemical name: Oct-2-en-4-one
- Synonyms: Butyl Propenyl Ketone, Propenyl Butyl Ketone
- Molecular Formula: $C_8H_{14}O$
- Molecular Weight: 126.2
- CAS No.: 4643-27-0
- FEMA No.: 3603
- Einecs No.: 225-071-7
- FDA: -
- CoE: 2313

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

  Eye irritation (Category 2) H319

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H319 Causes serious eye irritation.

  Precautionary statement(s)

  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Octen-4-one ≥ 96%（sum of isomers）

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Light-yellow
• Odor	Fruity floral odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	81 °C (20 ~ 21 mm Hg)
• Flash point:	61°C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.845 – 0.853
• Solubility in water:	Insoluble
• Organic solvents:	Miscible in ethanol at room temperature

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D36030-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CASSIA OIL

1. *Identification*

- Botanical name — *Cinnamonum cassia*
- Synonyms — Cassia Oil Traditional; Cassia oil Crude
- CAS No. — 8007-80-5
- FEMA No. — 2258
- Einecs No. — 284-635-0
- FDA — 182.20
- CoE — -

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2. Hazards identification

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Skin sensitisation (Category 1)	H317
Specific target organ toxicity - single exposure (Category 3)	H335

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xi	Irritant	R36/37/38, R43

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

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- **Other hazards** none

3. Composition/information on ingredients

- Cinnamic aldehyde ⩾ 75.0%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**

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Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Air sensitive.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Pale yellow or brown
• Odor	A characteristic odor and taste of cassia cinnamon
• PH value at 10g/l H_2O	N/A
• Boiling point	194-234°C
• Flash point	91.67 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.045~ 1.063
• Solubility in water	N/A
• Organic solvents	1 ml in 2mL of 70% alcohol

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Air
• Substances to be avoided	Strong oxidizing agents

- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 2,650 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

Full text of R-phrases referred to under sections 2

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Xi	Irritant
R36/37/38	Irritating to eyes, respiratory system and skin.
R43	May cause sensitisation by skin contact.

16. Other information

- Document Number: B-E22580-09
- Creation Date: Mar. 9, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

NONANAL NATURAL

1. *Identification*

- Product name: Nonanal Natural
- Synonyms: Aldehyde C-9;Pelargonic Aldehyde
- Molecular Formula: $C_9H_{18}O$
- Molecular Weight: 142.24
- CAS No.: 124-19-6
- FEMA No.: 2782
- Einecs No.: 204-688-5
- FDA: 172.510
- CoE: 114

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Nonanal ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH

OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to light yellow
• Odor	Fatty, citrus-rose on dilution
• pH value at 10g/l H_2O	N/A
• Boiling point (ºC)	93 °C at 31 hPa - lit.
• Flash point (ºC)	63 °C - closed cup
• Melting point (ºC)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.35 hPa at 25 °C
• Specific gravity @25°C	0.820~0.830
• Solubility	Soluble in alcohol, most fixed oils, propylene glycol; insoluble in glycerol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 5000 mg/kg
  Skin - rabbit - Severe skin irritation - 24 h
  Eyes - rabbit - Moderate eye irritation
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangeous goods
  IMDG: Not dangeous goods
  IATA: Not dangeous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

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- Document Number B-N27820-10
- Creation Date May. 25, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHIONAL

1. *Identification*

- Chemical name: 3-(Methylthio)Propanal
- Synonyms: 3-(Methylmercapto)Propionaldehyde; Beta-(Methylmercapto)Propionaldehyde
- Molecular Formula: C_4H_8OS
- Molecular Weight: 104.17
- CAS No.: 3268-49-3
- FEMA No.: 2747
- Einecs No.: 221-882-5
- FDA: 172.515
- CoE: 125

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Inhalation (Category 3)	H331
Skin corrosion (Category 1B)	H314

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H331	Toxic if inhaled.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P280	Wear protective gloves/ protective clothing/ eye protection/ face

	protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
Supplemental Hazard Statements	none

- **Other hazards** Stench.

3. Composition/information on ingredients

- Methional ≥ 95%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**

Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Colorless
• Odor	Meaty, potato
• pH value at 10g/l H_2O	N/A
• Boiling point:	165 - 166 °C - lit.
• Flash point:	74 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A

- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.037-1.052
- Solubility in water: Insoluble
- Organic solvents: 1 mL in 1 mL 95% alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 700 mg/kg
  LC50 Inhalation - rat - 4 h - 5.820 mg/m^3
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

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- **UN number**
  ADR/RID:2785 IMDG:2785 IATA:2785
- **Shipping Name:**
  ADR/RID: 4-THIAPENTANAL
  IMDG: 4-THIAPENTANAL
  IATA: 4-Thiapentanal
- **Hazard Class:**
  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D27470-10
- Creation Date: Jun. 7, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BENZALDEHYDE NATURAL

1. *Identification*

- Chemical name: Benzaldehyde
- Synonyms: Benzoic aldehyde; Artificial almond oil
- Molecular Formula: C_7H_6O
- Molecular Weight: 106.12
- CAS No.: 100-52-7
- FEMA No.: 2127
- Einecs No.: 202-860-4
- FDA: 172.510
- CoE: 101

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Acute toxicity, Oral (Category 4) H302

  Classification according to EU Directives 67/548/EEC or 1999/45/EC

  Xn Harmful R22

  For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

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3. Composition/information on ingredients

- Benzaldehyde ≥99%

---

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless
• Odor	Burning taste
• PH value at 10g/l H_2O	5.9 at 20 °C
• Boiling point:	178 - 179 °C - lit.
• Flash point:	64 °C - closed cup
• Melting point:	-26 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	1.4 %(V)
• Upper explosion limit:	8.5 %(V)

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- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: 5 hPa at 45 °C
- Specific gravity @25℃: 1.041 - 1.046
- Solubility in water: Slightly soluble
- Organic solvents: Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable under normal temperatures and pressures. Oxidizes when exposed to air. Becomes yellow over time.
- Conditions to Avoid: High temperatures, light, ignition sources, prolonged exposure to air, confined spaces.
- Substances to be avoided: Strong oxidizing agents, Strong reducing agents, Strong bases, Alkali metals, Aluminium, Iron, phenols, Oxygen
- Hazardous decomposition: Carbon monoxide, irritating and toxic gases, carbon dioxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 1.300 mg/kg
  LD50 Dermal - rabbit - 1.250 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Lepomis macrochirus - 1.07 mg/l - 96 h LOEC - Pimephales promelas (fathead minnow) - 0.45 mg/l - 7 d NOEC - Pimephales promelas (fathead minnow) - 0.22 mg/l - 7 d LC50 - Leuciscus idus (Golden orfe) - 62 mg/l - 48 h
Toxicity to daphnia and other aquatic invertebrate	EC50 - Daphnia magna (Water flea) - 50 mg/l - 24 h

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1990 IMDG:1990 IATA:1990
- **Shipping Name:**
  ADR/RID: BENZALDEHYDE
  IMDG: BENZALDEHYDE
  IATA: Benzaldehyde
- **Hazard Class:**
  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available
  Full text of R-phrases referred to under sections 2

Xn	Harmful
R22	Harmful if swallowed

16. Other information

- Document Number: B-N21270-05
- Creation Date: Jan. 22, 16
- Revision: 5.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

FURFURYL ALCOHOL

1. *Identification*

• Chemical name	2-Hydroxymethylfuran
• Synonyms	Furfuryl Alcohol
• Molecular Formula	$C_5H_6O_2$
• Molecular Weight	98.10
• CAS No.	98-00-0
• FEMA No.	2491
• Einecs No.	202-626-1
• FDA	175.105
• CoE	2023

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 3)	H301
Acute toxicity, Inhalation (Category 2)	H330
Acute toxicity, Dermal (Category 3)	H311
Eye irritation (Category 2)	H319
Carcinogenicity (Category 2)	H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335
Specific target organ toxicity - repeated exposure (Category 2)	H373

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
Precautionary statement(s)	
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

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P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 + P310	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/ doctor.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Furfuryl Alcohol ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

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- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

  Air sensitive.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Clear liquid
• Color	Pale yellow to brown
• Odor	Caramel

- PH value at 10g/l H_2O N/A
- Boiling point 170 °C - lit.
- Flash point 65 °C - closed cup
- Melting point -29 °C - lit
- Explosive properties N/A
- Lower explosion limit 1.8 %(V)
- Upper explosion limit 16.3 %(V)
- Ignition temperature 491 °C
- Oxidizing properties N/A
- Vapor pressure 7.3 hPa at 55 °C
  0.7 hPa at 20 °C
- Specific gravity @25°C 1.126-1.136
- Solubility in water Soluble
- Organic solvents Soluble

10. Stability and reactivity

- Chemical Stability Stable under recommended storage conditions.
- Conditions to Avoid Heat. May form explosive mixtures in air.
- Substances to be avoided Do not store near acids., Oxygen, Strong oxidizing agents
- Hazardous decomposition Carbon monoxide, carbon dioxide
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Oral - Rat - 177 mg/kg
  LC50 Inhalation - Rat - male and female - 4 h - > 0.82 - < 2.07 mg/l
  LD50 Dermal - Rabbit - 400 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity
  Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 32 mg/l - 96 h

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:2874 IMDG:2874 IATA:2874
- Shipping Name
  ADR/RID: FURFURYL ALCOHOL
  IMDG: FURFURYL ALCOHOL
  IATA: Furfuryl alcohol
- Hazard Class
  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- Packing Group
  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

---

16. Other information

- Document Number B-D24910-09
- Creation Date Feb. 25, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

THEASPIRANE

1. *Identification*

- Product name: Theaspirane
- Synonyms: 2,6,10,10-Tetramethyl-1-oxaspiro(4,5)-dec-6-ene
- Molecular Formula: $C_{13}H_{22}O$
- Molecular Weight: 194.31
- CAS No.: 36431-72-8
- FEMA No.: 3774
- Einecs No.: 253-031-9
- FDA: Listed
- CoE: 10515

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Theaspirane ≥85 (sum of stereo-isomers)

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

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- Eyes: Safety glasses
- Hand Protective gloves
- Skin: Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: Liquid
- Color: Colorless
- Odor -
- pH value at 10g/l H_2O N/A
- Boiling point (^oC): 65 (1 mm Hg)
- Flash point (^oC): 65
- Melting point (^oC): N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25℃: 0.938 - 0.943
- Solubility Insoluble in water, soluble in fats and alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN-no.: Not listed
- Shipping Name: Not dangeous goods
- Hazard Class: Not listed
- Packing Group: Not listed

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D37740-03
- Creation Date: 2016-08-29
- Revision: 3.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ALLYL HEXANOATE NATURAL

1. *Identification*

- Chemical name 2-Propenyl hexanoate
- Synonyms Allyl Caproate
- Molecular Formula $C_9H_{16}O_2$
- Molecular Weight 156.22
- CAS No. 123-68-2
- FEMA No. 2032
- Einecs No. 204-642-4
- FDA 172.510
- CoE 2181

---

2. *Hazards identification*

- **Classification of the substance or mixture**
- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 3)	H301
Acute toxicity, Dermal (Category 3)	H311
Chronic aquatic toxicity (Category 2)	H411

Classification according to EU Directives 67/548/EEC or 1999/45/EC

T, N Toxic, Dangerous for the environment R22, R24, R51/53

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
Supplemental Hazard	none

Statements

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Allyl Hexanoate ≥99%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to light yellow
• Odor	Strong, pineapple
• PH value at 10g/l H_2O	N/A
• Boiling point	75 - 76 °C at 20 hPa - lit.
• Flash point	66 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A

• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.884 - 0.890
• Solubility in water	Insoluble
• Organic solvents	1 ml in 6 ml 70% alcohol

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures.
• Conditions to Avoid	Incompatible materials, ignition sources, excess heat
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 218 mg/kg LD50 Dermal - rabbit - 300 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

• Toxicity	
Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 2.0 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 2 mg/l - 48 h

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**

  ADR/RID:2810 IMDG:2810 IATA:2810
- **Shipping Name**

  ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (Allyl hexanoate)

  IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (Allyl hexanoate)

  IATA: Toxic liquid, organic, n.o.s. (Allyl hexanoate)
- **Hazard Class**

  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-N20320-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

SAFETY DATA SHEET

Version 6.7
Revision Date 06/16/2021
Print Date 06/20/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Phenylacetaldehyde

Product Number : W287407
Brand : Aldrich
CAS-No. : 122-78-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 4), H227
Acute toxicity, Oral (Category 4), H302
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Skin sensitization (Sub-category 1A), H317
Short-term (acute) aquatic hazard (Category 2), H401

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H227	Combustible liquid.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H401	Toxic to aquatic life.

Precautionary statement(s)

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	α-Tolyaldehyde
Formula	:	C8H8O
Molecular weight	:	120.15 g/mol
CAS-No.	:	122-78-1
EC-No.	:	204-574-5

Component	Classification	Concentration
phenylacetaldehyde		
	Flam. Liq. 4; Acute Tox. 4; Skin Corr. 1B; Eye Dam.	<= 100 %

	1; Skin Sens. 1A; Aquatic Acute 2; H227, H302, H314, H318, H317, H401	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®).
Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed.

Storage stability
Recommended storage temperature
2 - 8 °C

Air sensitive. Store under inert gas.
Storage class (TRGS 510): 8A: Combustible, corrosive hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Butoject® (KCL 898)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: clear, colorless, to, light yellow
b)	Odor	pleasant, characteristic
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -10 °C (14 °F) - lit.
f)	Initial boiling point and boiling range	195 °C 383 °F
g)	Flash point	68 °C (154 °F) - (External MSDS)
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	2.09 hPa at 20 °C (68 °F) - OECD Test Guideline 104 2.67 hPa at 25 °C(77 °F) - OECD Test Guideline 104 8.2 hPa at 50 °C(122 °F) - OECD Test Guideline 104
l)	Vapor density	4.15
m)	Relative density	No data available
n)	Water solubility	18 g/l at 20 °C (68 °F) - OECD Test Guideline 105
o)	Partition coefficient: n-octanol/water	log Pow: 1.44 at 25 °C (77 °F) - OECD Test Guideline 117 - Bioaccumulation is not expected.
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Relative vapor density	4.15

SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents
Strong bases

10.4 Conditions to avoid
Air
Strong heating.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 1,550 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
LD50 Dermal - Rabbit - > 5,000 mg/kg
Remarks: (RTECS)
No data available

Skin corrosion/irritation
Skin - human skin
Result: Corrosive
(OECD Test Guideline 431)

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: Causes sensitization.
(OECD Test Guideline 429)

Germ cell mutagenicity
Test Type: reverse mutation assay
Test system: TA1535
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: reverse mutation assay
Test system: E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is

identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Repeated dose toxicity - Rat - male - Oral - NOAEL (No observed adverse effect level) - 25 mg/kg - LOAEL (Lowest observed adverse effect level) - 100 mg/kg

Repeated dose toxicity - Rat - female - Oral - NOAEL (No observed adverse effect level) - 100 mg/kg - LOAEL (Lowest observed adverse effect level) - 400 mg/kg

RTECS: CY1420000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

We have no description of any toxic symptoms.

The following applies to aldehydes in general: irritations after contact with eyes and skin. Mucosal irritations, coughing, and dyspnoea after inhalation.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Danio rerio (zebra fish) - > 6.2 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 20 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata (green algae) - 1.6 mg/l - 72 h (OECD Test Guideline 201)

12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 28 d
Result: 69 % - Readily biodegradable.
(OECD Test Guideline 301D)

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 3265 Class: 8 Packing group: II
Proper shipping name: Corrosive liquid, acidic, organic, n.o.s. (phenylacetaldehyde)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG

UN number: 3265 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (phenylacetaldehyde)

IATA

UN number: 3265 Class: 8 Packing group: II
Proper shipping name: Corrosive liquid, acidic, organic, n.o.s. (phenylacetaldehyde)

SECTION 15: Regulatory information

SARA 302 Components

This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

phenylacetaldehyde	CAS-No. 122-78-1	Revision Date

New Jersey Right To Know Components

phenylacetaldehyde	CAS-No. 122-78-1	Revision Date

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.7 Revision Date: 06/16/2021 Print Date: 06/20/2021

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www.bestally.com.cn

MATERIAL SAFETY DATA SHEET

2-ETHYL-3, 5(OR 6)-DIMETHYL PYRAZINE

1. *Identification*

- Chemical name: Mixture of 2-Ethyl-3,5-Dimethylpyrazine and 2-Ethyl-3,6-Dimethylpyrazine
- Synonyms: -
- Molecular Formula: $C_8H_{12}N_2$
- Molecular Weight: 136.20
- CAS No.: 27043-05-6;13925-07-0;55031-15-7
- FEMA No.: 3149
- Einecs No.: 248-182-2; 237-694-1
- FDA: -
- CoE: 727

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335

- **Label elements**

Pictogram 

Signal word Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Ethyl-3 ,5(or 6)-Dimethyl Pyrazine (Sum of isomers) ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Air sensitive.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to slightly yellow
• Odor	Toasted nut, chocolaty, sweet woody odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	180 - 181 °C - lit.
• Flash point:	69 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.950 – 0.980
• Solubility in water:	Soluble
• Organic solvents:	Soluble in oils, organic solvents

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D31490-10
- Creation Date: May. 27, 21
- Revision: 10.0

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- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ETHYL-3, 5(OR 6)-DIMETHYL PYRAZINE NATURAL

1. *Identification*

- Chemical name: Mixture of 2-Ethyl-3,5-Dimethylpyrazine and 2-Ethyl-3,6-Dimethylpyrazine
- Synonyms: -
- Molecular Formula: $C_8H_{12}N_2$
- Molecular Weight: 136.20
- CAS No.: 27043-05-6;13925-07-0; 55031-15-7; 13360-65-1
- FEMA No.: 3149
- Einecs No.: 248-182-2;237-694-1;236-417-1
- FDA: -
- CoE: 2245;727

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335

- **Label elements**

Pictogram 

Signal word Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Ethyl-3 ,5(or 6)-Dimethyl Pyrazine (Sum of isomers) ≥ 95%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Air sensitive.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Colorless to slightly yellow
• Odor	Toasted nut, chocolaty, sweet woody odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	180 - 181 °C - lit.
• Flash point:	69 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.950 – 0.980
• Solubility in water:	Soluble
• Organic solvents:	Soluble in oils, organic solvents

10. *Stability and reactivity*

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	No information available.

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N31490-11
- Creation Date: Jan. 14, 22
- Revision: 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

1-OCTEN-3-OL

1. *Identification*

- Chemical name 1-Octen-3-ol
- Synonyms Amyl Vinyl Carbinol
- Molecular Formula $C_8H_{16}O$
- Molecular Weight 128.21
- CAS No. 3391-86-4
- FEMA No. 2805
- Einecs No. 222-226-0
- FDA 172.515
- CoE 72

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable Liquide (Category 4)	H227
Acute toxicity, Oral (Category 3)	H301
Acute Tox, Dermal (Category 5)	H313
Skin irritation (Category 2)	H315
Skin Sens. (Category 1)	H317
Eye irritation (Category 2)	H319
Acute toxicity, Inhalation (Category 4)	H332
Acute aquatic toxicity (Category 2)	H401

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word Danger

Hazard statement(s)

H227	Combustible liquid
H301	Toxic if swallowed.
H313	May be harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation.
H332	Harmful if inhaled
H401	Toxic to aquatic life

Precautionary statement(s)

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P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P273	Avoid release to the enviorment.
Supplemental Hazard Statements	none

- **Other hazards**

  Possible sensitizer

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3. *Composition/information on ingredients*

- 1-Octen-3-ol ≥ 99%

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4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray; Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Mushroom, herbaceous
• pH value at 10g/l H_2O	N/A
• Boiling point	84 - 85 °C at 33 hPa - lit.
• Flash point	71 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A

• Lower explosion limit	0.9 %(V)
• Upper explosion limit	8 %(V)
• Ignition temperature	265 °Cat 1,013 hPa - DIN 51794
• Oxidizing properties	N/A
• Vapor pressure	0.3 hPa at 20 °C - OECD Test Guideline 104
• Specific gravity @25°C	0.831 – 0.839
• Solubility in water	Insoluble
• Organic solvents	1 ml in 1 ml 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - female - 175 mg/kg LC50 Inhalation - Rat - 4 h - 3.72 mg/l LD50 Dermal - Rabbit - 3,300 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

• Toxicity	
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 8.02 mg/l - 48 h
Toxicity to algae	ErC50 - Pseudokirchneriella subcapitata (green algae) -7.05 mg/l - 72 h EC10 - Pseudokirchneriella subcapitata (green algae) -1.51 mg/l - 72 h
Toxicity to bacteria	EC50 - Pseudomonas putida - 3,300 mg/l - 0.5 h

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:2810 IMDG:2810 IATA:2810

- **Shipping Name**

  ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (1-octen-3-ol)

  IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (1-octen-3-ol)

  IATA: Toxic liquid, organic, n.o.s. (1-octen-3-ol)

- **Hazard Class**

  ADR/RID:6.1 IMDG:6.1 IATA:6.1

- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number B-D28050-10
- Creation Date May. 24, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ACETYL FURAN NATURAL

1. *Identification*

- Chemical name: 1-(Furan-2-yl)Ethanone
- Synonyms: 2-Furyl Methyl Ketone; Methyl 2-Furyl Ketone
- Molecular Formula: $C_6H_6O_2$
- Molecular Weight: 110.11
- CAS No.: 1192-62-7
- FEMA No.: 3163
- Einecs No.: 214-757-1
- FDA: 172.510
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 2)	H300
Acute toxicity, Inhalation (Category 4)	H332
Acute toxicity, Dermal (Category 3)	H311
Serious eye damage (Category 1)	H318

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Danger
Hazard statement(s)	
H300	Fatal if swallowed.
H311	Toxic in contact with skin
H318	Causes serious eye damage.
H332	Harmful if inhaled.
Precautionary statement(s)	
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
Supplemental Hazard	none

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Statements

- **Other hazards** none

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3. Composition/information on ingredients

- 2-Acetyl Furan ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: 2 - 8 °C
Handle and store under inert gas. Air and moisture sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Yellow to brown
• Odor	Coffee-like
• pH value at 10g/l H_2O	N/A
• Boiling point	67 °C at 13 hPa - lit.
• Flash point	71 °C - closed cup
• Melting point	26 - 28 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.102 – 1.107
• Solubility in water	Very slightly soluble in water
• Organic solvents	1ml in 2ml 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

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- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 33 mg/kg
  LC50 Inhalation - rat - 4 h - 1,130 mg/m^3
  LD50 Dermal - rat - 500 - 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2811 IMDG:2811 IATA:2811
- **Shipping Name**
  ADR/RID: TOXIC SOLID, ORGANIC, N.O.S. (2-Furyl methyl ketone)
  IMDG: TOXIC SOLID, ORGANIC, N.O.S. (2-Furyl methyl ketone)
  IATA: Toxic solid, organic, n.o.s. (2-Furyl methyl ketone)
- **Hazard Class**
  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-N31630-10
- Creation Date Jun. 7, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

FURANEOL METHYL ETHER

1. *Identification*

• Chemical name	2,5-Dimethyl-4-Methoxyfuran-3(2H)-one
• Synonyms	2,5-Dimethyl-4-Methoxy-2,3-Dihydro-3-Furanone; 2,5-Dimethyl-4-Methyoxy-2H-Furan-3-one; Mesifuran;
• Molecular Formula	$C_7H_{10}O_3$
• Molecular Weight	142.15
• CAS No.	4077-47-8
• FEMA No.	3664
• Einecs No.	223-797-9
• FDA	-
• CoE	-

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
Precautionary statement(s)	
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P301+P312	IF SWALLOWED: call a POISON CENTER/doctor/... IF you feel unwell.
P330	Rinse mouth.
P501	Dispose of contents/container in accordance to local regulations.
Supplemental Hazard Statements	none
Other hazards	none

3. Composition/information on ingredients

- Furaneol Methyl Ether ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of

electrostatic charge.

- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C

Handle and store under inert gas. Air and moisture sensitive

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Sweet, carmellic, burnt sugar, aroma
• pH value at 10g/l H_2O	N/A
• Boiling point	221°C
• Flash point	75 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.085-1.092
• Solubility in water	Insoluble in water
• Organic solvents	soluble in ethanol

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10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	No information available
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

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13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA**:** Not dangerous goods
- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D36640-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

5-METHYL FURFURAL

1. *Identification*

- Chemical name: 5-Methylfuran-2-Carbaldehyde
- Synonyms: 5-Methyl-2-Furfural
- Molecular Formula: $C_6H_6O_2$
- Molecular Weight: 110.11
- CAS No.: 620-02-0
- FEMA No.: 2702
- Einecs No.: 210-622-6
- FDA: -
- CoE: 119

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- 5-Methyl Furfural ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C
  Handle and store under inert gas. Air and moisture sensitive.

---

8. *Exposure controls and personal protection*

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

- Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
- Respiratory protection: In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
- Eyes: Safety glasses
- Hand: Protective gloves
- Skin: Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

- Form: Liquid
- Color: Yellow to orange/brown (darkens on standing)
- Odor: Nutty, caramel
- pH value at 10g/l H_2O: N/A
- Boiling point: 187 - 189 °C at 1,013 hPa
- Flash point: 72 °C - closed cup
- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.095 – 1.110
- Solubility in water: N/A
- Organic solvents: 1 mL in 1 mL 95% ethanol

---

10. *Stability and reactivity*

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. *Toxicological information*

- Acute toxicity: LD50 Oral - rat - 2,200 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**:
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D27020-10
- Creation Date: May. 24, 21
- Revision: 10.0

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MATERIAL SAFETY DATA SHEET

BUTYRIC ACID NATURAL

1. *Identification*

- Chemical name: Butyric Acid
- Synonyms: -
- Molecular Formula: $C_4H_8O_2$
- Molecular Weight: 88.11
- CAS No.: 107-92-6
- FEMA No.: 2221
- Einecs No.: 203-532-3
- FDA: 182.60
- CoE: 5

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin corrosion (Category 1B)	H314

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

- **Other hazards** Stench

---

3. *Composition/information on ingredients*

- Butyric Acid ≥99%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**

  Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	colourless
• Odor	Strong rancid butter
• PH value at 10g/l H_2O	3 at 10 g/l at 20 °C
• Boiling point	162 °C - lit.
• Flash point	72 °C - closed cup
• Melting point	-6 - -3 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	2%(V)
• Upper explosion limit	10 %(V)
• Ignition temperature	440°C
• Oxidizing properties	N/A
• Vapor pressure	0,57 hPa at 20 °C
• Specific gravity @25°C	0.953~0.957

- Solubility in water — Insoluble.
- Organic solvents — Soluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — no data available
- Substances to be avoided — Strong Oxidizing agents,
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 2,940 mg/kg
  LD50 Dermal - rabbit - 6,083 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC0 - Leuciscus idus melanotus - 96 mg/l - 48 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 61.7 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2820 IMDG:2820 IATA:2820
- **Shipping Name**
  ADR/RID: BUTYRIC ACID
  IMDG: BUTYRIC ACID
  IATA: Butyric acid
- **Hazard Class**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group**

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ADR/RID: III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-N22210-10
- Creation Date Jun. 7, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ACETYL PYRIDINE

1. *Identification*

• Chemical name	2-Acetylpyridine
• Synonyms	2-Acetopyridine; Methyl 2-Pyridyl Ketone
• Molecular Formula	C_7H_7NO
• Molecular Weight	121.14
• CAS No.	1122-62-9
• FEMA No.	3251
• Einecs No.	214-355-6
• FDA	-
• CoE	2315

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin irritation (Category 2) H315

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H315 Causes skin irritation.

  Precautionary statement(s)

  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Acetyl Pyridine ≥ 99%

---

4. *First aid measures*

- **Eye contact:**

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Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Handle and store under inert gas. Air and moisture sensitive.

---

8. Exposure controls and personal protection

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• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to yellow
• Odor	Tobacco-like, popcorn, heavy-oily-fatty
• pH value at 10g/l H_2O	N/A
• Boiling point	188 – 189 °C - lit.
• Flash point	73 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.077-1.084
• Solubility in water	N/A
• Organic solvents	Soluble in ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	No information available.

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- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D32510-10
- Creation Date — May. 24, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL ACETOACETATE NATURAL

1. *Identification*

- Chemical name: Ethyl 3-oxybutanoate
- Synonyms: Ethyl Acetoacetate
- Molecular Formula: $C_6H_{10}O_3$
- Molecular Weight: 130.14
- CAS No.: 141-97-9
- FEMA No.: 2415
- Einecs No.: 205-516-1
- FDA: 172.510
- CoE: 240

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Ethyl Acetoacetate ≥ 99.0%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

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• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to very light yellow
• Odor	Fruity
• PH value at 10g/l H_2O	N/A
• Boiling point	181 °C - lit.
• Flash point	73.5 °C - closed cup
• Melting point	-43 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	1.4 %(V)
• Upper explosion limit	9.5 %(V)
• Ignition temperature	304°C
• Oxidizing properties	N/A
• Vapor pressure	0.26 hPa at 20 °C 0.42 hPa at 25 °C 3.5 hPa at 50 °C
• Specific gravity @25°C	1.022-1.027
• Solubility in water	Slightly soluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Ignition sources, excess heat
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon oxides
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - female - 10,800 mg/kg LD50 Dermal - rat - male and female - > 2,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	semi-static test LC50 - Danio rerio (zebra fish) - > 100 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h
Toxicity to algae	static test EC50 - Desmodesmus subspicatus (green algae) - > 100 mg/l - 72 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group** Not listed
  ADR/RID:- IMDG: IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number B-N24150-10
- Creation Date May. 27, 21
- Revision 10.0

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MATERIAL SAFETY DATA SHEET

1-OCTEN-3-YL ACETATE

1. *Identification*

- Chemical name: Oct-1-en-3-yl Acetate
- Synonyms: Amyl Crotonyl Acetate
- Molecular Formula: $C_{10}H_{18}O_2$
- Molecular Weight: 170.25
- CAS No.: 2442-10-6
- FEMA No.: 3582
- Einecs No.: 219-474-7
- FDA: 172.515
- CoE: 11716

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin sensitisation (Category 1)	H317

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
Precautionary statement(s)	
P280	Wear protective gloves.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 1-Octen-3-yl Acetate ≥ 98%

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Almost colorless
• Odor	Metallic mushroom
• pH value at 10g/l H_2O	N/A
• Boiling point:	80 °C at 20 hPa - lit.
• Flash point:	73.89 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.865 – 0.886
• Solubility in water:	Insoluble
• Organic solvents:	1 mL in 1 mL 95% ethanol

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 850 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D35820-10
- Creation Date: Jun. 8, 21

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- Revision: 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-METHYLBUTYRIC ACID NATURAL,OPTICAL ACTIVE

1. *Identification*

- Chemical name: 2-Methylbutyric Acid
- Synonyms: -
- Molecular Formula: $C_5H_{10}O_2$
- Molecular Weight: 102.13
- CAS No.: 116-53-0
- FEMA No.: 2695
- Einecs No.: 204-145-2
- FDA: 172.510
- CoE: 2002

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Dermal (Category 4)	H312
Skin corrosion (Category 1B)	H314

Classification according to EU Directives 67/548/EEC or 1999/45/EC

C	Corrosive	R21/22, R34

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Danger
Hazard statement(s)	
H302	Harmful if swallowed.
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.

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Supplemental Hazard Statements: none

- **Other hazards**: Stench.

---

3. Composition/information on ingredients

- 2-Methylbutyric Acid ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**

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Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Fruity
• pH value at 10g/l H_2O	N/A
• Boiling point:	176 - 177 °C - lit.
• Flash point:	74 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	0.7 hPa at 20 ℃
• Specific gravity @25℃:	0.932 – 0.936
• Solubility in water:	N/A
• Organic solvents:	1 ml in 1 ml 95% alcohol

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10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 1,750 mg/kg
  LD50 Dermal - rabbit - 1,367 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3265 IMDG:3265 IATA:3265
- **Shipping Name**:
  ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (2-Methylbutyric acid)
  IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (2-Methylbutyric acid)
  IATA: Corrosive liquid, acidic, organic, n.o.s. (2-Methylbutyric acid)
- **Hazard Class:**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

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- **Chemical Safety Assessment**

  no data available

Full text of R-phrases referred to under sections 2

C	Corrosive
R21/22	Harmful in contact with skin and if swallowed
R34	Causes burns.

16. Other information

- Document Number: B-N26951-05
- Creation Date: Jan. 22, 16
- Revision: 5.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ISOVALERIC ACID NATURAL

1. *Identification*

- Chemical name: Isovaleric Acid
- Synonyms: 3-Methylbutyric Acid
- Molecular Formula: $C_5H_{10}O_2$
- Molecular Weight: 102.13
- CAS No.: 503-74-2
- FEMA No.: 3102
- Einecs No.: 207-975-3
- FDA: 172.510
- CoE: 8

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin corrosion (Category 1B) H314

  Classification according to EU Directives 67/548/EEC or 1999/45/EC

  C Corrosive R34

  For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Danger
Hazard statement(s)	
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
Supplemental Hazard Statements	none

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- **Other hazards** none

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3. Composition/information on ingredients

- Isovaleric acid ≥99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Disagreeable, rancid, cheese
• PH value at 10g/l H_2O	N/A
• Boiling point	175 - 177 °C
• Flash point	74 °C
• Melting point	-29 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.507 hPa at 20 °C
• Specific gravity @25℃	0.923 – 0.928
• Solubility in water	Slight soluble
• Organic solvents	Soluble in most organic solvents

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 2,000 mg/kg
  LD50 Dermal - rabbit - 3,560 mg/kg
  LD50 Intravenous - mouse - 1,120 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3265 IMDG:3265 IATA:3265
- **Shipping Name**
  ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Isovaleric acid)
  IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Isovaleric acid)
  IATA: Corrosive liquid, acidic, organic, n.o.s. (Isovaleric acid)
- **Hazard Class**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group**
  ADR/RID:II IMDG:II IATA:II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

Full text of R-phrases referred to under sections 2

C	Corrosive
R34	Causes burns.

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16. Other information

- Document Number B-N31020-09
- Creation Date Feb. 25, 20
- Revision 9.0
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MATERIAL SAFETY DATA SHEET

L-LINALOOL NATURAL

1. *Identification*

- Chemical name: 3,7-Dimethyl-1,6-Octadien-3-ol
- Synonyms: L-Linalool
- Molecular Formula: $C_{10}H_{18}O$
- Molecular Weight: 154.25
- CAS No.: 126-91-0
- FEMA No.: 2635
- Einecs No.: 204-811-2
- FDA: 172.510
- CoE: 61
- REACH registration: 01-2120789580-44-0000
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Linalool ≥98.5%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Floral
• PH value at 10g/l H_2O	N/A
• Boiling point	198 °C - lit.
• Flash point	76 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.858-0.867
• Solubility in water	Insoluble

- Organic solvents — 1 ml in 4 ml 60% alcohol

10. Stability and reactivity

- Chemical Stability: — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Intravenous - mouse - 180 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**

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no data available

16. Other information

- Document Number B-N26351-10
- Creation Date Jun. 7, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ACETYL THIAZOLE

1. *Identification*

- Chemical name 2-Acetylthiazole
- Synonyms Methyl 2-Thiazolyl Ketone; 1-(Thiazol-2-yl)ethan-1-one
- Molecular Formula C_5H_5NOS
- Molecular Weight 127.17
- CAS No. 24295-03-2
- FEMA No. 3328
- Einecs No. 246-134-5
- FDA -
- CoE 11726

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Eye irritation (Category 2)	H319
Skin sensitization (Category 1)	H317

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Warning

Hazard statement(s)

H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Precautionary statement(s)

P280	Wear protective gloves.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- 2-Acetyl Thiazole ⩾ 98%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Popcorn
• pH value at 10g/l H_2O	N/A
• Boiling point	89 - 91 °C at 16 hPa - lit.
• Flash point	78 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	0.29% (v)
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25℃	1.219 – 1.226
• Solubility in water	Insoluble
• Organic solvents	1 ml in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

Full text of R-phrases referred to under sections 2

Xn	Harmful
R22	Harmful if swallowed.
R36	Irritating to eyes.
R43	May cause sensitisation by skin contact.

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16. Other information

- Document Number B-D33280-10
- Creation Date Mar. 4, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

MAPLE LACTONE PYRAZINE

1. *Identification*

- Chemical name: 6,7-Dihydro-5-methyl-5H-cyclopentapyrazine
- Synonyms: (5H)-5-Methyl-6,7-dihydrocyclopenta(b)pyrazine
- Molecular Formula: $C_8H_{10}N_2$
- Molecular Weight: 134.18
- CAS No.: 23747-48-0
- FEMA No.: 3306
- Einecs No.: 245-864-1
- FDA: -
- CoE: 2314

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

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- Maple lactone pyrazine ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Yellow to brown
• Odor	Peanut
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	200 °C – lit.
• Flash point (°C)	79 °C - closed cup
• Melting point (°C)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.048-1.059
• Solubility	Slightly soluble in water; 1 ml in 1 ml 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:- IMDG:- IATA:-
- Shipping Name
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- Hazard Class
  ADR/RID:- IMDG:- IATA:-
- Packing Group
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-D33060-10
- Creation Date — May. 27, 21
- Revision — 10.0

- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ISOBUTYL-3-METHOXYPYRAZINE

1. *Identification*

- Chemical name 2-Isobutyl-3-Methoxypyrazine
- Synonyms 2-Methoxy-3-Isobutylpyrazine
- Molecular Formula $C_9H_{14}N_2O$
- Molecular Weight 166.22
- CAS No. 24683-00-9
- FEMA No. 3132
- Einecs No. 246-402-1
- FDA -
- CoE 11338

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Isobutyl-3-Methoxypyrazine ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Green bell pepper, green pea
• pH value at 10g/l H_2O	N/A
• Boiling point	214 - 215 °C
• Flash point	80 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.983 – 1.003
• Solubility in water	Soluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	No information available.

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- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:- IMDG:- IATA:-
- Shipping Name
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- Hazard Class
  ADR/RID:- IMDG:- IATA:-
- Packing Group
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-D31320-10
- Creation Date — May. 25, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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Quality defines a brand, reputation builds an alliance.

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MATERIAL SAFETY DATA SHEET

2-ACETYL-3-METHYL PYRAZINE

1. *Identification*

- Chemical name: 1-(3-Methylpyrazinyl) Ethan-1-one
- Synonyms: 2-Acetyl-3-Methyl-1,4-Diazine
- Molecular Formula: $C_7H_8ON_2$
- Molecular Weight: 136.15
- CAS No.: 23787-80-6
- FEMA No.: 3964
- Einecs No.: 245-889-8
- FDA: -
- CoE: 11296

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard	none

Statements

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Acetyl-3-Methyl Pyrazine ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**

Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Clear liquid
• Color:	Colorless to dark yellow
• Odor	Roasted nutty vegetable toasted grain
• pH value at 10g/l H_2O	N/A
• Boiling point:	90 °C at 27 hPa
• Flash point:	80°C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.105 – 1.117
• Solubility in water:	Insoluble
• Organic solvents:	Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- UN number
  ADR/RID:- IMDG:- IATA:-
- Shipping Name:
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- Hazard Class:
  ADR/RID:- IMDG:- IATA:-
- Packing Group:
  ADR/RID:- IMDG: IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D39640-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PYRUVIC ACID NATURAL

1. *Identification*

- Chemical name: 2-Oxopropanoic Acid
- Synonyms: Acetylformic Acid; 2-Ketopropionic Acid; Pyroracemic Acid
- Molecular Formula: $C_3H_4O_3$
- Molecular Weight: 88.06
- CAS No.: 127-17-3
- FEMA No.: 2970
- Einecs No.: 204-824-3
- FDA: 172.510
- CoE: 19

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin corrosion (Category 1B) H314

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

Signal word	Danger
Hazard statement(s)	
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P310	Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Supplemental Hazard Statements	none

- **Other hazards** May form explosive peroxides.

---

3. *Composition/information on ingredients*

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- Pyruvic acid ≥ 95%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C

Handle and store under inert gas. Air and light sensitive. Moisture sensitive.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to amber viscous
• Odor	A sour vinegar-like odor
• pH value at 10g/l H_2O	N/A
• Boiling point	165 °C - lit.
• Flash point	82 °C - closed cup
• Melting point	11 - 12 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.254-1.272
• Solubility in water	Miscible with water
• Organic solvents	Soluble in organic solvents, oils

---

10. Stability and reactivity

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• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	LD50 Subcutaneous - Mouse - 3,533 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

  ADR/RID:3265 IMDG:3265 IATA:3265

- **Shipping Name**

  ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Pyruvic acid)
  IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Pyruvic acid)
  IATA: Corrosive liquid, acidic, organic, n.o.s. (Pyruvic acid)

- **Hazard Class**

  ADR/RID:8 IMDG:8 IATA:8

- **Packing Group**

  ADR/RID:II IMDG:II IATA:II

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

---

16. Other information

- Document Number B-N29700-10
- Creation Date May. 25, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CITRAL NATURAL

1. *Identification*

- Chemical name 3,7-Dimethyl-2,6-octadienal
- Synonyms Geranial and neral; Lemarome
- Molecular Formula $C_{10}H_{16}O$
- Molecular Weight 152.24
- CAS No. 5392-40-5
- FEMA No. 2303
- Einecs No. 226-394-6
- FDA 182.60
- CoE 109

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin sensitisation (Category 1) H317

  Skin irritation (Category 2) H315

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H315 Causes skin irritation.

  H317 May cause an allergic skin reaction.

  Precautionary statement(s)

  P280 Wear protective gloves.

  Supplemental Hazard Statements none

  Other hazards none

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3. *Composition/information on ingredients*

- Citral ≥ 95%(sum of isomers)

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Strong, lemon
• pH value at 10g/l H_2O	N/A
• Boiling point	229 °C - lit.
• Flash point	95 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	4.3 % (V)
• Upper explosion limit	9.9 % (V)
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	< 1 hPa at 50 °C
• Specific gravity @25°C	0.885 – 0.891
• Solubility in water	N/A
• Organic solvents	1 ml in 7 ml 70% alcohol

---

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 4,960 mg/kg
  LD50 Dermal - rabbit – 2,2500mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **UN proper shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG: - IATA: -
- **Packing Group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

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- Document Number B-N23030-10
- Creation Date May. 24, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DECANAL NATURAL

1. *Identification*

- Chemical name: Decanal
- Synonyms: Aldehyde C-10; Capraldehyde
- Molecular Formula: C10H20O
- Molecular Weight: 156.27
- CAS No.: 112-31-2
- FEMA No.: 2362
- Einecs No.: 203-957-4
- FDA: 172.510
- CoE: 98

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Eye irritation (Category 2)	H319
Chronic aquatic toxicity (Category 3)	H412

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

Signal word	Warning
Hazard statement(s)	
H319	Causes serious eye irritation.
H412	Harmful to aquatic life with long lasting effects.
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Decanal ⩾98%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers

which are opened must be carefully resealed and kept upright to prevent leakage.

NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING.

Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to light yellow
• Odor	N/A
• PH value at 10g/l H_2O	N/A
• Boiling point	207 - 209 °C - lit.
• Flash point	83 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.1 hPa at 20 °C
• Specific gravity @25°C	0.823 - 0.832
• Solubility in water	Insoluble.
• Organic solvents	Miscible in alcohol

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures
• Conditions to Avoid	Incompatible materials, ignition sources, excess heat, strong

oxidants

- Substances to be avoided: Strong oxidizing agents, strong reducing agents, strong bases
- Hazardous decomposition: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - mouse - > 41,750 mg/kg
  LD50 Dermal - rabbit - 4,193 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3082 IMDG:3082 IATA:3082
- **Shipping Name**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Decanal)
  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Decanal)
  IATA: Environmentally hazardous substance, liquid, n.o.s. (Decanal)
- **Hazard Class**
  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number B-N23620-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL BENZOATE NATURAL

1. *Identification*

- Chemical name: Methyl Benzoate
- Synonyms: Methyl Benzenecarboxylate; Niobe Oil; Oil of Niobe
- Molecular Formula: $C_8H_8O_2$
- Molecular Weight: 136.15
- CAS No.: 93-58-3
- FEMA No.: 2683
- Einecs No.: 202-259-7
- FDA: 172.510
- CoE: 260

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
Precautionary statement(s)	
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
Supplemental Hazard Statements	none

- **Other hazards** May form explosive peroxides.

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3. *Composition/information on ingredients*

- Methyl Benzoate ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Deep, pungent, floral
• pH value at 10g/l H_2O	N/A
• Boiling point	198 - 199 °C - lit.
• Flash point	83 °C - closed cup
• Melting point	-12 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.51 hPa at 25 °C
• Specific gravity @25°C	1.082-1.088
• Solubility in water	N/A
• Organic solvents	1 mL in 4 mL 60% alcohol

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - Rat - male - 1,625 mg/kg
  LD50 Dermal - Rabbit - male and female - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Danio rerio (zebra fish) - 23 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 62.6 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**

no data available

16. Other information

- Document Number B-N26830-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

5-ETHYL-4-HYDROXY-2-METHYL-3(2H)-FURANONE

1. *Identification*

- Chemical name: 5-Ethyl-4-Hydroxy-2-Methyl-3(2H)-Furanone
- Synonyms: Homofuraneol
- Molecular Formula: $C_7H_{10}O_3$
- Molecular Weight: 142.15
- CAS No.: 27538-09-6
- FEMA No.: 3623
- Einecs No.: 248-513-0
- FDA: -
- CoE: 13084
- REACH registration 01-2120792531-52-0000
- Only representtive Chemical Inspection &Regulation service Limited
- Address Room 002, Regus Harcourt Centre D02 HW77, Dublin,
- Contact Person(E-mail) info@cirs-reach.com
- Telephone +00 353 1 477 3708
- Contact Person Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
Precautionary statement(s)	

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P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Ethyl-4-Hydroxy-5-Methyl-3(2H)-Furanone ≥ 96%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Yellow
• Odor	Sweet fruity caramel, butter scotch
• pH value at 10g/l H_2O	N/A
• Boiling point:	248 -249 °C
• Flash point:	84 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.133 – 1.143

- Solubility in water: Soluble
- Organic solvents: Insoluble in ethanol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - mouse - 1.932 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-D36230-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

LINALYL ACETATE NATURAL

1. *Identification*

- Chemical name: 1,5-Dimethyl-1-ethenylhex-4-enyl acetate
- Synonyms: Bergamol; 3,7-Dimethylocta-1,6-dien-3-yl acetate; Licareol acetate; Linalool acetate
- Molecular Formula: $C_{12}H_{20}O_2$
- Molecular Weight: 196.29
- CAS No.: 115-95-7
- FEMA No.: 2636
- Einecs No.: 204-116-4
- FDA: 172.510
- CoE: 203
- REACH Registration number: 01-2119454789-19-0013
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

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P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes.Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

3. *Composition/information on ingredients*

- Linalyl Acetate ≥ 98%

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless
• Odor	Floral, fruity
• pH value at 10g/l H_2O	N/A
• Boiling point:	220 °C - lit
• Flash point:	94 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	0.1 hPa at 20 °C
• Solubility in water:	Insoluble
• Organic solvents:	1 ml in 5 ml 70% alcohol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 13,934 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N26360-10
- Creation Date: Apr. 19, 21

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- Revision: 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CITRONELLAL NATURAL

1. *Identification*

- Chemical name: 3,7-Dimethyl-6-octenal
- Synonyms: dl-Citronellal; beta-Citronellal; 2,3-Dihydrocitral; Rhodinal
- Molecular Formula: $C_{10}H_{18}O$
- Molecular Weight: 154.25
- CAS No.: 106-23-0
- FEMA No.: 2307
- Einecs No.: 203-376-6
- FDA: 172.510
- CoE: 110

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Skin sensitisation (Category 1)	H317
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335
Chronic aquatic toxicity (Category 2)	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P280	Wear protective gloves.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** - none

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3. *Composition/information on ingredients*

- Citronellal ≥92%

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4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 oC) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Intense lemon-citronella-rose
• PH value at 10g/l H_2O	N/A
• Boiling point	207°C -lit
• Flash point	86 °C -closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.16 hPa at 20 °C

- Specific gravity @25°C 0.850-0.860
- Solubility in water N/A
- Organic solvents 1ml in 2ml 70% alcohol

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid no data available
- Substances to be avoided: Strong oxidizing agents, Strong acids, Strong bases
- Hazardous decomposition: Carbon monoxide, carbon dioxide,
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Oral - rat - 2,420 mg/kg
  LD50 Dermal - Rabbit - 2,500 - 5,000 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity to daphnia and other aquatic invertebrates: static test EC50 - Daphnia magna (Water flea) - 8.7 mg/l - 48 h
- Toxicity to algae: static test EC50 - Desmodesmus subspicatus (Scenedesmus subspicatus) - 13.33 mg/l - 72 h

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3082 IMDG:3082 IATA:3082
- **Shipping Name**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,7-Dimethyloctanal)
  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,7-Dimethyloctanal)
  IATA: Environmentally hazardous substance, liquid, n.o.s. (3,7-Dimethyloctanal)

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- **Hazard Class**
  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-N23070-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CITRONELLA OIL

1. *Identification*

- Botanical name: Cymbopogon nardus rendle
- Synonyms: Citronella Oil
- CAS No.: 8000-29-1
- FEMA No.: 2308
- Einecs No.: 289-753-6
- FDA: 182.20
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Serious eye damage (Category 1)	H318
Skin sensitisation (Category 1)	H317
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H315	Causes skin irritation.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Citronellal oil

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4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**

Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Pale yellow to brown-yellow
• Odor	With a very strong odor of citronellal
• PH value at 10g/l H_2O	N/A
• Boiling point:	231 °C at 1,013 hPa
• Flash point:	87.8 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.880~0.893
• Solubility in water:	Insoluble

- Organic solvents: Soluble

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid: No information available.
- Substances to be avoided: Strong bases, Strong oxidizing agents, Strong acids, Acid chlorides, Acid anhydrides
- Hazardous decomposition: Carbon oxides
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: no data available
- Sensitization: no data available
- Mutagenicity: no data available
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or**

mixture

no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-E23080-10
- Creation Date: Jun. 8, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DIETHYL MALONATE

1. *Identification*

- Product name: Diethyl malonate
- Synonyms: Ethyl malonate; Malonic ester
- Molecular Formula: $C_7H_{12}O_4$
- Molecular Weight: 160.17
- CAS No.: 105-53-3
- FEMA No.: 2375
- Einecs No.: 203-305-9
- FDA: 172.515
- CoE: 2106

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Eye irritation (Category 2) H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

Signal word	Warning
Hazard statement(s)	
H319	Causes serious eye irritation.
Precautionary statement(s)	
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Diethyl malonate ≥ 98%

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4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower

eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Liquid
• Color:	Colorless
• Odor	Slightly fruity odor
• pH value at 10g/l H_2O	N/A
• Boiling point (°C):	199~200
• Flash point (°C):	90
• Melting point (°C):	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.053 - 1.056
• Solubility	1 mL in 1.5 mL 60% alcohol

10. *Stability and reactivity*

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - mouse - 6.400 mg/kg
  LD50 Dermal - rabbit - > 16.880 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. TRANSPORT INFORMATION

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -
- **Environmental hazards**
  ADR/RID: no IMDG Marine pollutant: no IATA: no
- **Special precautions for user**
  no data available

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D23750-10
- Creation Date: Jun. 8, 21

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- Revision: 10.0
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MATERIAL SAFETY DATA SHEET

ETHANOLAMINE NATURAL

1. *Identification*

- Chemical name: 2-Aminoethanol
- Synonyms: Ethanolamine
- Molecular Formula: C_2H_7NO
- Molecular Weight: 61.08
- CAS No.: 141-43-5
- FEMA No.: -
- Einecs No.: 205-483-3
- FDA: 173.315
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Inhalation (Category 4)	H332
Acute toxicity, Dermal (Category 4)	H312
Skin corrosion (Category 1B)	H314
Serious eye damage (Category 1)	H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335
Long-term (chronic) aquatic hazard (Category 3)	H412

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Danger
Hazard statement(s)	
H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled
H314	Causes severe skin burns and eye damage.

H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

• Ethanolamine	≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colourless to almost colorless
• Odor	Ammonia smell
• pH value at 10g/l H_2O	12.1 at 100 g/l at 20 °C
• Boiling point (°C):	170 °C - lit. 69 - 70 °C at 13 hPa
• Flash point (°C):	91 °C at ca.1,013 hPa
• Melting point (°C):	10 - 11 °C - lit
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.012 – 1.022
• Solubility	Soluble in water and ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - male and female - 1,089 mg/kg

LD50 Dermal - Rabbit - 1,015 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish semi-static test	LC50 - Cyprinus carpio (Carp) - 349 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 65 mg/l - 48 h
Toxicity to algae	ErC50 - Pseudokirchneriella subcapitata (green algae) -2.8 mg/l - 72 h NOEC - Pseudokirchneriella subcapitata (green algae) - 1mg/l -72 h
Toxicity to bacteria	EC10 - activated sludge - > 1,000 mg/l - 30 min

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- UN number
  ADR/RID:2491 IMDG:2491 IATA:2491
- Shipping Name:
  ADR/RID: ETHANOLAMINE
  IMDG: ETHANOLAMINE
  IATA: Ethanolamine
- Hazard Class:
  ADR/RID:8 IMDG:8 IATA:8
- Packing Group:
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B- N90580-10
- Creation Date: Feb. 23, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL PHENYLACETATE NATURAL

1. *Identification*

- Chemical name: Methyl phenylacetate
- Synonyms: Methyl alpha-toluate
- Molecular Formula: $C_9H_{10}O_2$
- Molecular Weight: 150.18
- CAS No.: 101-41-7
- FEMA No.: 2733
- Einecs No.: 202-940-9
- FDA: 172.510
- CoE: 2155

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Methyl Phenylacetate ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless or nearly colorless
• Odor	Honey, jasmine
• pH value at 10g/l H_2O	N/A
• Boiling point	218 °C - lit.
• Flash point	91 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.031-1.067
• Solubility in water	Insoluble
• Organic solvents	1 ml in 6ml 60% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 2,550 mg/kg LD50 Dermal - rabbit - 2,400 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number B-N27330-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ANETHOLE NATURAL

1. *Identification*

- Chemical name 1-Methoxy-4-[(E)-prop-1-enyl]benzene
- Synonyms trans-Anethole; Isoestragole; p-Propenylanisole
- Molecular Formula $C_{10}H_{12}O$
- Molecular Weight 148.20
- CAS No. 4180-23-8
- FEMA No. 2086
- Einecs No. 224-052-0
- FDA 172.510
- CoE 183

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin sensitisation (Category 1), H317

  Label elements

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H317 May cause an allergic skin reaction.

  Precautionary statement(s)

  P280 Wear protective gloves.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Anethole ≥99%

---

4. *First aid measures*

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- **After eye contact**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **After skin contact**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **After inhalation**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

---

6. Accidental release measures

- **General Information**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling**
  Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.
- **Storage**
  Store in a cool, dry place. Store in a tightly closed container.

---

8. Exposure controls and personal protection

- **Exposure limits**
  Use adequate ventilation to keep airborne concentrations low.
- **Personal protective equipment**

• Eyes	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
• Skin	Wear appropriate protective gloves to prevent skin exposure.
• Clothing	Wear appropriate protective clothing to minimize contact with
• Respirators	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9. Physical and chemical properties

• Form	Liquid at or above 23℃
• Color	Colorless to faintly yellow
• Odor	Sweet taste / anise
• PH value at 10g/l H2O	N/A
• Boiling point	231 - 237 °C
• Flash point	91°C
• Melting point	22-23°C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.983 - 0.988
• Solubility in water	Slightly soluble in water
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability:	Stable under normal temperatures and pressures.
• Conditions to Avoid	Light.
• Substances to be avoided:	Strong bases, Strong oxidizing agents
• Hazardous decomposition:	Carbon monoxide, carbon dioxide
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 2,090 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-N20860-10
- Creation Date — May. 24, 21
- Revision — 10.0

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MATERIAL SAFETY DATA SHEET

STYRALLYL ACETATE NATURAL

1. *Identification*

- Chemical name: Methyl Phenylcarbinyl Acetate
- Synonyms: Styrallyl Acetate; α-Phenyl Ethyl Acetate
- Molecular Formula: $C_{10}H_{12}O_2$
- Molecular Weight: 164.20
- CAS No.: 93-92-5
- FEMA No.: 2684
- Einecs No.: 202-288-5
- FDA: 172.510
- CoE: 573

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Styrallyl Acetate ⩾99.0%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.

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- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

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• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Gardenia
• PH value at 10g/l H_2O	N/A
• Boiling point	94 - 95 °C at 16 hPa - lit.
• Flash point	91°C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.023 - 1.026
• Solubility in water	Insoluble
• Organic solvents	Soluble in most fixed oils, gly; 1 mL in 7mL 60% alc

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Incompatible materials, excess heat, strong oxidants
• Substances to be avoided	Strong bases, strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide, acrid smoke and fumes.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - > 5,000 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:_
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number B-N26840-10
- Creation Date May. 24, 21
- Revision 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

ANISE STAR OIL

1. *Identification*

- Botanical name: Aniseed Star Oil (Illicium verum Hook,F.)
- Synonyms: Anise Star Oil; Aniseed Oil
- CAS No.: 68952-43-2
- FEMA No.: 2096
- Einecs No.: 283-518-1
- FDA: 182.20

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin sensitisation (Category 1) H317

  Chronic aquatic toxicity (Category 2) H411

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H317 May cause an allergic skin reaction.

  H411 Toxic to aquatic life with long lasting effects

  Precautionary statement(s)

  P273 Avoid release to the environment.

  P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

  P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

  P391 Collect spillage.

  P501 Dispose of contents/ container to an approved waste disposal plant.

  Supplemental Hazard none

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Statements

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Anethol ≥85%

---

4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**

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Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form:	liquid
• Color:	Colorless to pale yellow
• Odor	Characteristic odor of anise
• PH value at 10g/l H_2O	N/A
• Boiling point:	232 °C - lit.
• Flash point:	93°C – closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A

- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 0.978 ~ 0.988
- Solubility in water: Insoluble
- Organic solvents: Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid Heating
- Substances to be avoided: Strong oxidizing agents
- Hazardous decomposition: Carbon monoxide, carbon dioxide
- Hazardous Will not occur.

---

11. Toxicological information

- Acute toxicity LD50 Oral - rat - 2.250 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: 3082 IMDG:3082 IATA:3082
- **Shipping Name:**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Anise star oil, natural, FG)

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IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Anise star oil, natural, FG)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Anise star oil, natural, FG)

- **Hazard Class:**

  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group:**

  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-E20960-10
- Creation Date: Jun. 10, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CUMINIC ALDEHYDE

1. *Identification*

- Chemical name 4-Isopropylbenzaldehyde
- Synonyms Cumin Aldehyde; Cuminal; p-Cuminic Aldehyde
- Molecular Formula $C_{10}H_{12}O$
- Molecular Weight 148.20
- CAS No. 122-03-2
- FEMA No. 2341
- Einecs No. 204-516-9
- FDA 172.515
- CoE 111

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  Precautionary statement(s)

  P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Cuminic Aldehyde ≥ 99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

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- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

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• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Strong, pungent, cumin oil
• pH value at 10g/l H_2O	N/A
• Boiling point	235 - 236 °C - lit.
• Flash point	93 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	< 0.1 hPa at 20 °C
• Specific gravity @25°C	0.975 – 0.980
• Solubility in water	Insoluble
• Organic solvents	1 ml in 4 ml 70% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 1,390 mg/kg LD50 Dermal - rabbit - 2,800 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D23410-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TEA KETONE

1. *Identification*

- Chemical name: 2,6,6-Trimethyl-2-cyclohex-2-ene-1,4-dione
- Synonyms: keto-Isophorone
- Molecular Formula: $C_9H_{12}O_2$
- Molecular Weight: 152.20
- CAS No.: 1125-21-9
- FEMA No.: 3421
- Einecs No.: 214-406-2
- FDA: Listed
- CoE: 11200

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Acute toxicity, Oral (Category 4) H302

  Skin sensitisation (Category 1) H317

  Classification according to EU Directives 67/548/EEC or 1999/45/EC

  Xn Harmful R22, R43

  For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  H317 May cause an allergic skin reaction.

  Precautionary statement(s)

  P280 Wear protective gloves

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Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Tea Ketone ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**

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Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form:	Solid
• Color:	White to colourless
• Odor	Woody, musty sweet, aroma
• pH value at 10g/l H_2O	N/A
• Boiling point (^oC):	N/A
• Flash point (^oC):	94
• Melting point (^oC):	23 - 28
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A

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- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25℃: N/A
- Solubility Slightly soluble in water; soluble in alcohol

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity LD50 Oral - mouse - 1.000,0 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- UN-no.: Not listed
- Shipping Name: Not dangerous goods

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- Hazard Class: Not listed
- Packing Group: Not listed

We hereby certify that the captioned Tea Ketone are non-hazardous materials for air transportation in any nature. The consignment is fully described by proper shipping name and packed, marked and in proper condition for carriage by air. We hereby further certify that the consignment is not classified as dangerous under the current edition of the IATA 59th Effective 1 January 2018, Dangerous goods regulations and all applicable carrier and government regulations and the Tea Ketone can be shipped by air.

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out
  Full text of R-phrases referred to under sections 2

Xn	Harmful
R22	Harmful if swallowed.
R43	May cause sensitisation by skin contact.

---

16. Other information

- Document Number: B-D34210-10
- Creation Date: 2021-03-13
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL LEVULINATE NATURAL

1. *Identification*

- Chemical name: Ethyl 4-oxovalerate
- Synonyms: Ethyl 4-oxopentanoate; Ethyl acetylpropanoate
- Molecular Formula: $C_7H_{12}O_3$
- Molecular Weight: 114.17
- CAS No.: 539-88-8
- FEMA No.: 2442
- Einecs No.: 208-728-2
- FDA: 172.510
- CoE: 3773

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin Corrisive (Category 1C) H314

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram

  Signal word: Warning

  Hazard statement(s)

  H314: Causes severe skin burns and eye damage

  Precautionary statement(s)

  P280: Wear protective gloves/ eye protection/ face protection.

  P303 + P361 + P353: IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

- Other hazards: none

---

3. *Composition/information on ingredients*

- Ethyl Levulinate: ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Fruity, apple, green
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	93 - 94 °C at 24 hPa - lit.
• Flash point (°C)	94 °C - closed cup
• Melting point (°C)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.009-1.014
• Solubility	Soluble in ethanol

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - > 5,000 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:3265 IMDG: 3265 IATA: 3265
- **UN proper shipping name**
  ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O. S.(Ethyl levulinate)
  IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O. S. (Ethyl levulinate)
  IATA: Corrosive liquid, acidc, organic, n.o.s(Ethyl levulinate)
- **Transport hazard class(es)**
  ADR/RID:8 IMDG:8 IATA:8
- **Packaging group**
  ADR/RID:III IMDG:III IATA: III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

---

16. Other information

- Document Number B-N24420-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BENZYL ACETATE NATURAL

1. *Identification*

• Chemical name	Benzyl Acetate
• Synonyms	Acetic Acid Benzyl Ester
• Molecular Formula	$C_9H_{10}O_2$
• Molecular Weight	150.18
• CAS No.	140-11-4
• FEMA No.	2135
• EINECS No.	205-399-7
• FDA	172.510
• CoE	2040

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Chronic aquatic toxicity (Category 3) H412

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram None

  Signal word None

  Hazard statement(s)

  H412 Harmful to aquatic life with long lasting effects

  Precautionary statement(s)

  P273 Avoid release to the environment.

  P501 Dispose of contents/container to…

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Benzyl Acetate ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists

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- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Sweet, floral, fruity
• PH value at 10g/l H_2O	N/A
• Boiling point	206 °C - lit.
• Flash point	95 °C - closed cup
• Melting point	-51 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	460 °C
• Oxidizing properties	N/A
• Vapor pressure	31 hPa at 110 °C
• Specific gravity @25°C	1.052~1.056
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures. Volatile in steam.
• Conditions to Avoid	heat
• Substances to be avoided	Strong oxidizing agents, acids, Bases, Reducing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - male and female - > 2,000 mg/kg LCLo Inhalation - Rat - male and female - 4 h - > 0.766 mg/l

LD50 Dermal - Rabbit - > 5,000 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- **Toxicity**

Toxicity to fish	flow-through test LC50 - Oryzias latipes - 4 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 17 mg/l -
Toxicity to algae	Growth inhibition EC50 - Desmodesmus subspicatus (Scenedesmus subspicatus) - 110 mg/l - 72 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N21350-10
- Creation Date — Apr. 14, 21

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MATERIAL SAFETY DATA SHEET

BENZYL ALCOHOL NATURAL

1. *Identification*

- Chemical name: Benzyl Alcohol
- Synonyms: alpha-Hydroxytoluene; Phenyl Carbinol; Phenylmethanol
- Molecular Formula: C_7H_8O
- Molecular Weight: 108.14
- CAS No.: 100-51-6
- FEMA No.: 2137
- EINECS No.: 202-859-9
- FDA: 172.510
- CoE: 58

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Inhalation (Category 4)	H332
Acute toxicity, Oral (Category 4)	H302

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn	Harmful	R20/22

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word: Warning

Hazard statement(s)

H302	Harmful if swallowed.
H332	Harmful if inhaled.

Precautionary statement(s) none

Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. *Composition/information on ingredients*

- Benzyl Alcohol ≥99%

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4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**

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Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

hygroscopic.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless
• Odor	Slightly pungent, faint aromatic, fruity odour
• PH value at 10g/l H_2O	N/A
• Boiling point	203-205°C
• Flash point	96°C- closed cup
• Melting point	-16~-13°C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	436°C
• Oxidizing properties:	N/A
• Vapor pressure	5.00 hPa at 77 °C 17.7 hPa at 100 °C 0.125 hPa at 25 °C
• Specific gravity @25℃	1.042~1.047
• Solubility in water	Slightly soluble
• Organic solvents	Soluble

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10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — Ignition sources, excess heat.
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1,230 mg/kg
  LD50 Dermal - rabbit - 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.
  (RTECS: DN3150000)

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill) - 10 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 55 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available
- **Full text of R-phrases referred to under sections 2**

Xn	Harmful
R20/22	Harmful by inhalation and if swallowed.

---

16. Other information

- Document Number: B-N21370-05
- Creation Date: Aug. 2, 16
- Revision: 5.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GAMMA-VALEROLACTONE NATURAL

1. *Identification*

- Chemical name 5-Methyldihydro-2(3H)-Furanone
- Synonyms Penta-1,4-Lactone
- Molecular Formula $C_5H_8O_2$
- Molecular Weight 100.12
- CAS No. 108-29-2
- FEMA No. 3103
- Einecs No. 203-569-5
- FDA -
- CoE 757

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Gamma-Valerolactone ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Warm, sweet, herbaceous
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	82 - 85 °C at 13 hPa - lit. 207 - 208 °C - lit.
• Flash point (°C)	96 °C - closed cup
• Melting point (°C)	-31 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.047-1.054
• Solubility	Moderately soluble in water; soluble in alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 8,800 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N31030-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL SALICYLATE NATURAL

1. *Identification*

- Chemical name: Methyl 2-hydroxybenzoate
- Synonyms: Methyl 2-hydroxybenzoate
- Molecular Formula: $C_8H_8O_3$
- Molecular Weight: 152.15
- CAS No.: 119-36-8
- FEMA No.: 2745
- Einecs No.: 204-317-7
- FDA: 175.105
- CoE: 433

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  Precautionary statement(s)

  P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Methyl salicylate ≥ 98%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Light sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to yellow
• Odor	Wintergreen
• pH value at 10g/l H_2O	N/A
• Boiling point (°C):	222 °C - lit.
• Flash point (°C):	96 °C - closed cup
• Melting point (°C):	-8 - -7 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	1 hPa at 54 °C
• Specific gravity @25° C:	1.180~1.185
• Solubility	Slightly soluble in water; 1 ml in 7 ml 70% alc

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Oral - rat - 887 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	static test LC50 - Danio rerio (zebra fish) - > 100 mg/l - 96 h
Toxicity to algae	static test EC50 - Desmodesmus subspicatus (green algae) - 27 mg/l - 72 h

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N27450-10
- Creation Date: Mar. 16, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

γ -HEXALACTONE NATURAL

1. *Identification*

- Chemical name: 5-Ethyldihydro-2(3H)-Furanone; 4-Hexanolide
- Synonyms: Hexa-1,4-Lactone; 4-Hydroxyhexanoic Acid Lactone
- Molecular Formula: $C_6H_{10}O_2$
- Molecular Weight: 114.14
- CAS No.: 695-06-7
- FEMA No.: 2556
- Einecs No.: 211-778-8
- FDA: 172.510
- CoE: 2254

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

  Eye irritation (Category 2) H319

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H319 Causes serious eye irritation.

  Precautionary statement(s)

  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- γ-Hexalactone ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**

Store in cool place, Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Clear, liquid
• Color	Colorless
• Odor	Herbaceous, sweet
• PH value at 10g/l H_2O	N/A
• Boiling point	219 °C - lit.
• Flash point	98 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.020 – 1.025
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - >5000 mg/kg
  LD50 Dermal - rabbit - >5000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

---

16. Other information

- Document Number: B-N25560-10
- Creation Date: Jun. 7, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

LEVULINIC ACID NATURAL

1. *Identification*

- Chemical name: 4-Oxovaleric Acid
- Synonyms: 3-Acetylpropionic Acid; Beta-Acetylpropionic Acid
- Molecular Formula: $C_5H_8O_3$
- Molecular Weight: 116.12
- CAS No.: 123-76-2
- FEMA No.: 2627
- Einecs No.: 204-649-2
- FDA: 172.510
- CoE: 23

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** - none

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3. Composition/information on ingredients

- Levulinic Acid ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Light sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid, may congeal
• Color	Yellow to brown
• Odor	Smoky, caramel
• pH value at 10g/l H_2O	N/A
• Boiling point	245 - 246 °C - lit.
• Flash point	98 °C - closed cup
• Melting point	30 - 33 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 102 °C
• Specific gravity @25°C	1.136 – 1.142
• Solubility in water	N/A
• Organic solvents	1 mL in 1 mL 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.

- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1,850 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N26270-10
- Creation Date — May. 25, 21

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- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

NERYL ACETATE NATURAL

1. *Identification*

- Chemical name: cis-3,7-Dimethyl-2,6-Octadien-1-yl Acetate
- Synonyms: Neryl Acetate
- Molecular Formula: $C_{12}H_{20}O_2$
- Molecular Weight: 196.29
- CAS No.: 141-12-8
- FEMA No.: 2773
- Einecs No.: 205-459-2
- FDA 172.510
- CoE: 2061

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Neryl Acetate ≥ 96.0%of $C_{12}H_{20}O_2$

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Sweet, floral
• pH value at 10g/l H_2O	N/A
• Boiling point:	134 °C at 33 hPa 234 - 236 °C at 1,013 hPa
• Flash point:	98.8 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.905 – 0.914
• Solubility in water:	N/A
• Organic solvents:	1 mL in 1 mL 95% alcohol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - > 5.000 mg/kg LD50 Dermal - rabbit - > 5.000 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N27730-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

4-METHYL GUAIACOL NATURAL

1. *Identification*

- Chemical name: 2-Methoxy-4-Methylphenol
- Synonyms: Creosol; Homocatechol Monoethyl ether; 4-Methylguaiacol; Valspice
- Molecular Formula: $C_8H_{10}O_2$
- Molecular Weight: 138.17
- CAS No.: 93-51-6
- FEMA No.: 2671
- Einecs No.: 202-252-9
- FDA: 172.510
- CoE: 175

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Labelling according Regulation (EC) No 1272/2008 [CLP]**

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

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- **Other hazards** **none**

3. *Composition/information on ingredients*

- 4-Methylguaiacol ⩾98.0%

4. *First aid measures*

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**

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Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Handle and store under inert gas. Air and moisture sensitive.

8. *Exposure controls and personal protection*

- Technical measures: -local exhaust ventilation necessary
  -take precautionary measures against electrostatic charging
  -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
- Engineering Controls: -Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
- Respiratory protection: -In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
- Eyes: - Safety glasses
- Hand - Protective gloves
- Skin: -Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

- Form: Liquid
- Color: Colourless to yellowish
- Odor: Sweet, spicy, slightly vanilla-like odour
- PH value at 10g/l H_2O: N/A
- Boiling point: 221 - 222 °C - lit.
- Flash point: 99 °C - closed cup
- Melting point: 5 °C - lit.
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.089-1.096
- Solubility in water: Slight soluble
- Organic solvents: miscible in acl.

10. *Stability and reactivity*

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid: Incompatible materials, ignition sources, excess heat, strong oxidants
- Substances to be avoided: Strong oxidizing agents, Strong bases, Acid anhydrides, Acid

chlorides

- Hazardous decomposition: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Oral - rat - 740 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

  Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 150 mg/l - 24 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**

  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**:

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or**

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mixture

no data available

- **Chemical Safety Assessment**

no data available

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16. Other information

- Document Number: B-N26710-10
- Creation Date: Jun. 8, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL PHENYLACETATE NATURAL

1. *Identification*

- Chemical name: Ethyl phenylacetate
- Synonyms: Ethyl alpha-toluate; Ethyl benzeneacetate
- Molecular Formula: $C_{10}H_{12}O_2$
- Molecular Weight: 164.20
- CAS No.: 101-97-3
- FEMA No.: 2452
- Einecs No.: 202-993-8
- FDA: 172.510
- CoE: 2156

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Ethyl phenylacetate ≥98%

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4. *First aid measures*

- **Eye contact**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

Form	Liquid
Color	Colorless
Odor	Sweet, honey odor
PH value at 10g/l H_2O	N/A
Boiling point	229 °C - lit.
Flash point	98.9 °C - closed cup
Melting point	N/A
Explosive properties	N/A
Lower explosion limit	N/A
Upper explosion limit	N/A
Ignition temperature	N/A
Oxidizing properties	N/A
Vapor pressure	N/A
Specific gravity @25°C	1.027-1.032
Solubility in water	Insoluble
Organic solvents	1 ml in 3 ml 70% ethanol

10. Stability and reactivity

Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
Substances to be avoided	Metals, strong oxidizing agents, strong bases.
Hazardous decomposition	Carbon dioxide, carbon monoxide.
Hazardous Polymerization:	Will not occur.

11. Toxicological information

Acute toxicity	LD50 Oral - rat - 3,300 mg/kg
Sensitization	No information available.
Mutagenicity	No information available.
Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-N24520-10
- Creation Date — May. 25, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-METHYLTHIO-3(5 OR 6)-METHYL PYRAZINE

1. *Identification*

• Chemical name	2-Methyl-3 (5 or 6)-(Methylthio)Pyrazine
• Synonyms	Methylpyrazinyl Methyl Sulfides
• Molecular Formula	$C_6H_8SN_2$
• Molecular Weight	140.21
• CAS No.	2884-14-2; 2882-20-4; 67952-65-2; 2884-13-1
• FEMA No.	3208
• Einecs No.	267-918-3
• FDA	-
• CoE	2290

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Methyl-3,5(or6)-Methylthio Pyrazine (sum of isomers) ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to light yellow
• Odor	Cooked meat, roasted, almond, nutty, vegetable odor
• pH value at 10g/l H_2O	N/A
• Boiling point	85 – 87°C
• Flash point	99 °C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.133 – 1.153
• Solubility in water	Soluble
• Organic solvents	Soluble in ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:3334
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Aviation regulated liquid, n.o.s.
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:9
- **Packing Group**
  ADR/RID:- IMDG:- IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D32081-10
- Creation Date — May. 27, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BETA DAMASCENONE NATURAL

1. *Identification*

- Chemical name: 1-(2,6,6-Trimethyl-1,3-cyclohexadienyl)-2-buten-1-one
- Synonyms: Floriffone;4-(2,6,6-Trimethylcyclohexa-1,3-dienyl)but-2-en-4-one
- Molecular Formula: $C_{13}H_{18}O$
- Molecular Weight: 190.28
- CAS No.: 23696-85-7
- FEMA No.: 3420
- Einecs No.: 245-833-2
- FDA: 172.510
- CoE: 11197

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin sensitisation (Category 1)	H317
Chronic aquatic toxicity (Category 2)	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P391	Collect spillage.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard	none

- **Other hazards** none

3. Composition/information on ingredients

- β-Damascenone ≥98%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

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- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C and protected under nitrogen

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Pale yellow to yellow liquid
• Odor	Floral, fruity odour
• PH value at 10g/l H_2O	N/A
• Boiling point	274°C
• Flash point	> 110 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C	0.943-0.952
• Solubility in water	Insoluble
• Organic solvents	1 ml in 10 ml 95% alcohol

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — No information available.
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - Rat - > 2,000 mg/kg
  LD50 Dermal - Rabbit - > 4,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3082 IMDG:3082 IATA:3082
- **Shipping Name**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
  (1-(2,6,6-Trimethyl-1,3cyclohexadien-1-yl)-2-buten-1-one)
  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
  (1-(2,6,6-Trimethyl-1,3cyclohexadien-1-yl)-2-buten-1-one)
  IATA: Environmentally hazardous substance, liquid, n.o.s.
  (1-(2,6,6-Trimethyl-1,3-cyclohexadien-1yl)-2-buten-1-one)
- **Hazard Class**
  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N34200-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DELTA NONALACTONE NATURAL

1. *Identification*

- Chemical name 6-Butyltetrahydro-2-pyrone
- Synonyms Nona-1,5-lactone
- Molecular Formula $C_9H_{16}O_2$
- Molecular Weight 156.22
- CAS No. 3301-94-8
- FEMA No. 3356
- Einecs No. 221-974-5
- FDA -
- CoE 2194

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** - none

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3. *Composition/information on ingredients*

- Nonalactone-delta ≥ 98%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Heat-, light-, and moisture-sensitive. Dry residue is explosive.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Coconut
• pH value at 10g/l H_2O	N/A
• Boiling point	115 - 116 °C at 3 hPa
• Flash point	> 100 °C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.980 – 0.986
• Solubility in water	Insoluble
• Organic solvents	Souble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	No information available
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.

- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out.

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16. Other information

- Document Number — B-N33560-10
- Creation Date — May 27, 2021
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

BETA DAMASCENONE NATURAL 1%PG

1. *Identification*

• Chemical name	1-(2,6,6-Trimethyl-1,3-cyclohexadienyl)-2-buten-1-one solution
• Synonyms	Floriffone solution; 4-(2,6,6-Trimethylcyclohexa-1,3-dienyl)but-2-en-4-one solution
• Molecular Formula	$C_{13}H_{18}O$
• Molecular Weight	190.28
• CAS No.	23696-85-7/57-55-6
• FEMA No.	3420
• Einecs No.	245-833-2/200-338-0
• FDA	172.510
• CoE	-

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin sensitisation (Category 1) H317

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

  Pictogram

Signal word	Warning
Hazard statement(s)	
H317	May cause an allergic skin reaction.
Precautionary statement(s)	
P261	Avoid breathing dust/fume/gas/mist/vapor/spray
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P391	Collect spillage.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard	none

- **Other hazards** none

---

3. Composition/information on ingredients

- β-Damascenone ≥1%

---

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Normal measures for preventive fire protection.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C and protected under nitrogen

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow liquid
• Odor	Berry
• PH value at 10g/l H_2O	N/A
• Boiling point	188°C
• Flash point	100°C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	2.6%
• Upper explosion limit	12.6%
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.11hPa (0.1mmHg)
• Specific gravity@25°C	1.016 -1.039
• Solubility in water	Soluble
• Organic solvents	Soluble in most organic solvents

10. Stability and reactivity

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- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — No information available.
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N34201-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

T, T-2, 4-DECDIENAL NATURAL

1. *Identification*

- Chemical name (2E,4E)-Deca-2,4-dienal
- Synonyms (E),(E)-2,4-Decdienal
- Molecular Formula $C_{10}H_{16}O$
- Molecular Weight 152.24
- CAS No. 25152-84-5
- FEMA No. 3135
- Einecs No. 246-668-9
- FDA -
- CoE 2120

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- T,T-2,4-Decdienal ≥93 %(sum of isomers)

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Yellow
• Odor	Powerful, oily, chicken fat
• pH value at 10g/l H_2O	N/A
• Boiling point	114 - 116 °C at 13 hPa - lit.
• Flash point	101 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.866 – 0.876
• Solubility in water	Insoluble
• Organic solvents	1 ml in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N31350-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

HEXANOIC ACID NATURAL

1. *Identification*

- Chemical name: Hexanoic acid
- Synonyms: Caproic Acid
- Molecular Formula: $C_6H_{12}O_2$
- Molecular Weight: 116.16
- CAS No.: 142-62-1
- FEMA No.: 2559
- Einecs No.: 205-550-7
- FDA: 172.510
- CoE: 9

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Dermal (Category 3)	H311
Skin corrosion (Category 1B)	H314

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Danger
Hazard statement(s)	
H302	Harmful if swallowed.
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/ protective clothing.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard	none

Statements

- **Other hazards**

  Stench., Rapidly absorbed through skin

---

3. *Composition/information on ingredients*

- Hexanoic Acid ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;

  consult a physician if irritation persists

- **Skin contact:**

  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

  consult a physician if skin irritation persists

- **Inhalation:**

  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**

  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**

  Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Clear, liquid
• Color	Colourless to yellowish
• Odor	Cheesy, sweat
• PH value at 10g/l H_2O	N/A
• Boiling point	202 - 203 °C - lit.
• Flash point	102 °C - closed cup
• Melting point	-4 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	2 %(V)
• Upper explosion limit	10 %(V)
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 72 °C; 0,24 hPa at 20 °C
• Specific gravity @25°C	0.923-0.928
• Solubility in water	1 ml in 250 ml water

- Organic solvents — Soluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — No information available.
- Substances to be avoided — Bases, Oxidizing agents, Reducing agents, Allyl alcohol
- Hazardous decomposition — carbon dioxide
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral -rat- 4000 mg/kg
  LC50 Inhalation -mouse- 2h - 4100 mg/m3
  LD50 Dermal – rabbit – 584 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 88 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 22 mg/l - 24 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2829 IMDG:2829 IATA:2829
- **Shipping Name**
  ADR/RID: CAPROIC ACID
  IMDG: CAPROIC ACID
  IATA: Caproic acid
- **Hazard Class**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N25590-09
- Creation Date: May. 29, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PHENETHYL ALCOHOL NATURAL

1. *Identification*

• Chemical name	2-Phenethyl alcohol
• Synonyms	Benzene ethanol; 2-Phenyl ethyl alcohol
• Molecular Formula	$C_8H_{10}O$
• Molecular Weight	122.16
• CAS No.	60-12-8
• FEMA No.	2858
• Einecs No.	200-456-2
• FDA	172.510
• CoE	68
• REACH Registration number	01-2119963921-31-0006
• Only representtive	Chemical Inspection &Regulation service Limited
• Address	Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
• Contact Person(E-mail)	info@cirs-reach.com
• Telephone	+00 353 1 477 3708
• Contact Person	Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Eye irritation (Category 2)	H319

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
Precautionary statement(s)	
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Phenethyl Alcohol ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Rose
• pH value at 10g/l H_2O	N/A
• Boiling point	219 - 221 °C at 1,000 hPa - lit.
• Flash point	102 °C
• Melting point	-27 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.017 – 1.020
• Solubility in water	N/A
• Organic solvents	1 ml in 2 ml 50% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1,790 mg/kg
  LD50 Dermal - rabbit - 2,535 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**:
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  No data available
- **Chemical Safety Assessment**
  No data available

16. Other information

- Document Number — B-N28580-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GERANIOL NATURAL

1. *Identification*

• Chemical name	(2E)-3,7-Dimethyl-2,6-octadienol
• Synonyms	trans-3,7-Dimethyl-2,6-octadien-1-ol; 2,6-Dimethyl-2,6-octadien-8-ol; (E)-Geraniol
• Molecular Formula	$C_{10}H_{18}O$
• Molecular Weight	154.25
• CAS No.	106-24-1
• FEMA No.	2507
• Einecs No.	203-377-1
• FDA	172.510
• CoE	60

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Geraniol ≥ 95%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Viscous liquid
• Color	Clear yellow
• Odor	Sweet, fruity odor
• pH value at 10g/l H_2O	N/A
• Boiling point	229~230°C
• Flash point	102 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.870-0.885
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

- Acute toxicity — LD50 - Oral - rat- 4500 mg/kg
  LD50 - Dermal - rabbit -＞5000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N25070-10
- Creation Date — Jun. 7, 21
- Revision — 10.0

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- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

SAFETY DATA SHEET

Version 6.4
Revision Date 01/21/2020
Print Date 06/20/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Propylene glycol

Product Number : W294004
Brand : Aldrich
CAS-No. : 57-55-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Propylene glycol
1,2-Propanediol

Formula	:	$C_3H_8O_2$
Molecular weight	:	76.09 g/mol
CAS-No.	:	57-55-6
EC-No.	:	200-338-0

Component	Classification	Concentration
Propane-1,2-diol		
		<= 100 %

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours, mist or gas.
For personal protection see section 8.

6.2 Environmental precautions
No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

hygroscopic
Storage class (TRGS 510): 10: Combustible liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Propane-1,2-diol	57-55-6	TWA	10 mg/m3	USA. Workplace Environmental Exposure Levels (WEEL)

8.2 Exposure controls

Appropriate engineering controls
General industrial hygiene practice.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber

Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection not required. For nuisance exposures use type OV/AG (US) or type ABEK (EU EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
No special environmental precautions required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid, clear, viscous Colour: colourless
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -60 °C (-76 °F) - lit.
f)	Initial boiling point and boiling range	187 °C 369 °F - lit.
g)	Flash point	103 °C (217 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 12.5 %(V) Lower explosion limit: 2.6 %(V)
k)	Vapour pressure	0.11 hPa at 20 °C (68 °F)
l)	Vapour density	2.63 - (Air = 1.0)
m)	Relative density	1.036 g/cm3 at 25 °C (77 °F)
n)	Water solubility	soluble

o)	Partition coefficient: n-octanol/water	log Pow: -0.8 at 25 °C (77 °F)
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Relative vapour density	2.63 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Acid chlorides, Acid anhydrides, Oxidizing agents, Chloroformates, Reducing agentsAcid chlorides, Acid anhydrides, Oxidizing agents, Chloroformates, Reducing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 22,000 mg/kg
Remarks: (ECHA)
Inhalation: No data available
LD50 Dermal - Rabbit - > 2,000 mg/kg
Remarks: (ECHA)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitisation
Maximisation Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Chromosome aberration test in vitro
Human lymphocytes
Result: negative
Ames test
S. typhimurium
Result: negative
(ECHA)

Mouse - male - Bone marrow
Result: negative
(ECHA)

Rat - male - Bone marrow
Result: negative
(ECHA)

Rat - male
Result: negative
(ECHA)

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information

Repeated dose toxicity - Rat - male - Oral - 2 yr - No observed adverse effect level - 1,700 mg/kg
(ECHA)

RTECS: TY2000000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Oncorhynchus mykiss (rainbow trout) - 40,613 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Ceriodaphnia dubia (water flea) - 18,340 mg/l - 48 h (US-EPA)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 19,000 mg/l - 96 h (OECD Test Guideline 201)
Toxicity to bacteria	NOEC - Pseudomonas putida - > 20,000 mg/l - 18 h Remarks: (ECHA)

12.2 Persistence and degradability

Biodegradability	aerobic Dissolved organic carbon (DOC) - Exposure time 28 d Result: 98.3 % - Readily biodegradable. (OECD Test Guideline 301F)

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

Biological effects:
When discharged properly, no impairments in the function of adapted biological wastewater treatment plants are to be expected.

Stability in water	- 2.3 yr Remarks: reaction with hydroxyl radicals(IUCLID)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Propane-1,2-diol	CAS-No. 57-55-6	Revision Date 2007-03-01

Propane-1,2-diol	CAS-No. 57-55-6	Revision Date 2007-03-01

New Jersey Right To Know Components

Propane-1,2-diol	CAS-No. 57-55-6	Revision Date 2007-03-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.4 Revision Date: 01/21/2020 Print Date: 06/20/2021

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MATERIAL SAFETY DATA SHEET

ISOAMYL PHENYL ACETATE NATURAL

1. *Identification*

- Chemical name: 3-Methyl butyl 2-phenyl acetate
- Synonyms: Isopentyl phenyl acetate; 3-Methyl butyl phenyl acetate
- Molecular Formula: $C_{13}H_{18}O_2$
- Molecular Weight: 206.29
- CAS No.: 102-19-2
- FEMA No.: 2081
- Einecs No.: 203-012-6
- FDA: 172.510
- CoE: 2161

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008
  Skin irritation (Category 2) H315
- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
Precautionary statement(s)	none
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

Isoamyl Phenyl Acetate Natural	≥99%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to pale yellow
• Odor	Chocolate, honey
• PH value at 10g/l H_2O	N/A
• Boiling point:	268°C
• Flash point:	103.3°C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @20°C:	0.975 - 0.981
• Solubility in water:	In soluble
• Organic solvents:	Soluble

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**

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ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N20810-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GERANYL ACETATE NATURAL

1. *Identification*

- Chemical name: Trans-3,7-Dimethyl-2,6-Octadien-1-yl Acetate
- Synonyms: Geranyl Acetate
- Molecular Formula: $C_{12}H_{20}O_2$
- Molecular Weight: 196.29
- CAS No.: 105-87-3
- FEMA No.: 2509
- Einecs No.: 203-341-5
- FDA: 182.60
- CoE: 201

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Skin sensitisation (Category 1)	H317
Chronic aquatic toxicity (Category 3)	H412

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word: Warning

Hazard statement(s)

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P280	Wear protective gloves.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Geranyl Acetate ≥95%

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4. First aid measures

- **Eye contact**

  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;

  -consult a physician if irritation persists

- **Skin contact**

  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

  -consult a physician if skin irritation persists

- **Inhalation**

  -Remove from exposure and move to fresh air immediately.

  -Get medical aid.

- **Ingestion**

  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks**

  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.

- **Storage**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

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8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	- Safety glasses
• Hand	- Protective gloves
• Skin	-Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	liquid
• Color	Colourless
• Odor	floral
• PH value at 10g/l H_2O	N/A
• Boiling point	138 °C at 33 hPa - lit.
• Flash point	104 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	0.09 hPa at 20 °C
• Specific gravity @25°C	0.900 ~ 0.914
• Solubility in water	Insoluble
• Organic solvents	Soluble

---

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures
• Conditions to Avoid	Incompatible materials, ignition sources, excess heat, strong oxidants
• Substances to be avoided	Oxidizing agents
• Hazardous decomposition	Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 6,330 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

Toxicity to fish	static test LC50 - Leuciscus idus (Golden orfe) - 68.12 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Classes**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N25090-10
- Creation Date — May. 25, 21

- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PHENYLETHYL ACETATE NATURAL

1. *Identification*

- Chemical name: 2-Phenylethyl acetate
- Synonyms: Benzyl carbinyl acetate; Phenethyl acetate
- Molecular Formula: $C_{10}H_{12}O_2$
- Molecular Weight: 164.20
- CAS No.: 103-45-7
- FEMA No.: 2857
- Einecs No.: 203-113-5
- FDA: 172.510
- CoE: 221

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Phenylethyl Acetate ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container, store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless
• Odor	Sweet, rosy, honey
• pH value at 10g/l H_2O	N/A
• Boiling point:	238 - 239 °C - lit.
• Flash point:	105 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.030 – 1.034
• Solubility in water:	Insoluble
• Organic solvents:	1 mL in 2 mL 70% alcohol remains clear to 10 mL

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 3.670 mg/kg LC50 Inhalation - rat - > 500 mg/m3 LD50 Dermal - rabbit - 6.210 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N28570-10
- Creation Date: Jun. 7, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

4-ETHYL GUAIACOL NATURAL

1. *Identification*

- Chemical name: 4-Ethyl-2-methoxyphenol
- Synonyms: Homocreosol;1-Hydroxy-2-Methoxy-4-Ethylbenzene
- Molecular Formula: $C_9H_{12}O_2$
- Molecular Weight: 152.19
- CAS No.: 2785-89-9
- FEMA No.: 2436
- Einecs No.: 220-500-4
- FDA: 172.510
- CoE: 176

---

2. *Hazards identification*

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- 4-Ethyl Guaiacol ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Normal measures for preventive fire protection.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Warm, spicy, medicinal
• pH value at 10g/l H_2O	N/A
• Boiling point	234 - 236 °C - lit.
• Flash point	108 °C - closed cup
• Melting point	15 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.061-1.064
• Solubility in water	Insoluble
• Organic solvents	1 ml in 1 ml 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.

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• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

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11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

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- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-N24360-10
- Creation Date May. 25, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

THIOMENTONE NATURAL

1. *Identification*

- Product name: 8-Mercapto-3-p-Menthanone
- Synonyms: Thiomentone; 8-Mercapato-p-menthane-3-one; p-Mentha-8-thiol-3-one
- Molecular Formula: $C_{10}H_{18}OS$
- Molecular Weight: 186.31
- CAS No.: 38462-22-5
- FEMA No.: 3177
- Einecs No.: 253-953-1
- FDA: -
- CoE: 11789

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 3)	H301
Acute aquatic toxicity (Category 1)	H400

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H301	Toxic if swallowed.
H400	Very toxic to aquatic life.
Precautionary statement(s)	
P273	Avoid release to the environment.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
Supplemental Hazard Statements	none

- **Other hazards**

  Stench.

---

3. *Composition/information on ingredients*

- P-mentha-8-thiol-3-one ≥95%(sum of isomers)

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to yellow brown
• Odor	Black-currant
• PH value at 10g/l H_2O	N/A
• Boiling point	56 °C at 0.1 hPa - lit.
• Flash point	108 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.995-1.010
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2810 IMDG:2810 IATA:2810
- **Shipping Name**
  ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (2-(1-Mercapto-1-methylethyl) -5-methylcy clo hexan-1-one)
  IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (2-(1-Mercapto-1-methylethyl)-5-methylcyclo hexan-1-one)
  IATA: Toxic liquid, organic, n.o.s. (2-(1-Mercapto-1-methylethyl)-5-methylcyclo hexan-1-one)
- **Hazard Class**
  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number B-N31770-10
- Creation Date May. 27, 21
- Revision 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

2-METHYL-2-PENTENOIC ACID NATURAL

1. *Identification*

- Chemical name 2-Methyl-2-Pentenoic acid
- Synonyms -
- Molecular Formula $C_6H_{10}O_2$
- Molecular Weight 114.14
- CAS No. 3142-72-1
- FEMA No. 3195
- Einecs No. 221-552-0
- FDA -
- CoE 11680

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin corrosion (Category 1C)	H314
Serious eye damage (Category 1)	H318

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Danger
Hazard statement(s)	
H314	Causes severe skin burns and eye damage.
Precautionary statement(s)	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Methyl-2-pentenoic acid ≥99%

Quality defines a brand, reputation builds an alliance.

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid (high-purity material may solidify at room temp)
• Color	Colorless to pale yellow
• Odor	Fruity
• PH value at 10g/l H_2O	N/A
• Boiling point	207 - 208 °C - lit.
• Flash point	108 °C - closed cup
• Melting point	26 - 28 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @20°C	0.977 - 0.987
• Solubility in water	N/A
• Organic solvents	1 mL in 1 mL 95% ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

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11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3261 IMDG:3261 IATA:3261
- **Shipping Name**
  ADR/RID: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (2-methylpent-2-en-1-oic acid)
  IMDG: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (2-methylpent-2-en-1-oic acid)
  IATA: Corrosive solid, acidic, organic, n.o.s. (2-methylpent-2-en-1-oic acid)
- **Hazard Class**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N31950-10
- Creation Date — May. 25, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

GAMMA DODECALACTONE

1. *Identification*

- Chemical name: 5-Octyldihydro-2(3H)-furanone; 4-Dodecanolide
- Synonyms: Dodeca-1,4-lactone
- Molecular Formula: $C_{12}H_{22}O_2$
- Molecular Weight: 198.31
- CAS No.: 2305-05-7
- FEMA No.: 2400
- Einecs No.: 218-971-6
- FDA: 172.515
- CoE: 2240

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- γ-Dodecalactone ≥ 98%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.

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- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Clear, liquid
• Color	Colorless to pale yellow
• Odor	Fruity, peach, pear
• PH value at 10g/l H_2O	N/A
• Boiling point	130 - 132 °C at 2,0 hPa
• Flash point	109 °C - closed cup
• Melting point	17 - 18 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.933-0.938
• Solubility in water	N/A
• Organic solvents	1 ml in 1 ml 95% alcohol

10. *Stability and reactivity*

• Chemical Stability	Stable Stable under recommended storage conditions.
• Conditions to Avoid	Avoid moisture. Heat. Heat, flames and sparks.
• Substances to be avoided	Oxidizing agents

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- Hazardous decomposition — Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
- Hazardous — Will not occur

11. Toxicological information

- Acute toxicity — No information available
- Sensitization — No information available
- Mutagenicity — No information available
- Other Studies — No information available

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-D24000-10
- Creation Date May. 24, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GAMMA HEPTALACTONE NATURAL

1. *Identification*

- Chemical name 5-Propyldihydro-2(3H)-Furanone
- Synonyms Hepta-1,4-lactone
- Molecular Formula $C_7H_{12}O_2$
- Molecular Weight 128.17
- CAS No. 105-21-5
- FEMA No. 2539
- Einecs No. 203-279-9
- FDA 172.510
- CoE 2253

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin irritation (Category 2) H315

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H315 Causes skin irritation.

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Gamma Heptalactone ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Slightly oily liquid
• Color	Colorless
• Odor	Coconut, sweet, malty, caramel
• PH value at 10g/l H_2O	N/A
• Boiling point	61 - 62 °C at 3 hPa - lit.
• Flash point	110 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25℃	0.989 ~ 0.998
• Solubility in water	Insoluble
• Organic solvents	Soluble in alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - ＞5,000mg/Kg LD50 Dermal - rabbit -＞5,000mg/Kg
• Sensitization	No information available.
• Mutagenicity	No information available.

- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N25390-10
- Creation Date — May. 19, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DELTA OCTALACTONE NATURAL

1. *Identification*

- Chemical name: 6-Propyltetrahydro-2-pyrone; 5-Octanolide
- Synonyms: 5-Hydroxyoctanoic acid lactone; Octa-1,5-lactone
- Molecular Formula: $C_8H_{14}O_2$
- Molecular Weight: 142.20
- CAS No.: 698-76-0
- FEMA No.: 3214
- Einecs No.: 211-820-5
- FDA: -
- CoE: 2195

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Delta Octalactone ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves

- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to pale yellow
- Odor — Coconut
- pH value at 10g/l H_2O — N/A
- Boiling point (°C) — 234°C
- Flash point (°C) — 110 °C
- Melting point (°C) — N/A
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — 0.995-1.000
- Solubility — Insoluble in water; 1 ml in 1 ml 95% ethanol

10. Stability and reactivity

- Chemical Stability — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N32140-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

EUGENYL ACETATE NATURAL

1. *Identification*

- Chemical name: 4-Allyl-2-Methoxy Phenyl Acetate
- Synonyms: Eugenyl Acetate; Acetyl Eugenol
- Molecular Formula: $C_{12}H_{14}O_3$
- Molecular Weight: 206.24
- CAS No.: 93-28-7
- FEMA No.: 2469
- Einecs No.: 202-235-6
- FDA: 172.510
- CoE: 210

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
Precautionary statement(s)	
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Eugenyl Acetate ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Fused solid, melts at warm room temp to liq
• Color	Pale yellow
• Odor	Mild, clove
• pH value at 10g/l H_2O	N/A
• Boiling point	281 - 286 °C - lit.
• Flash point	110 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.077 – 1.082
• Solubility in water	Insoluble
• Organic solvents	1 ml in 5 ml 70% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1,670 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/AID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N24690-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

SULFUROL

1. *Identification*

- Chemical name: 5-Hydroxyethyl-4-Methylthiazole
- Synonyms: Sulfurol; 4-Methyl -5-Thiazole Ethanol
- Molecular Formula: C_6H_9NOS
- Molecular Weight: 143.20
- CAS No.: 137-00-8
- FEMA No.: 3204
- Einecs No.: 205-272-6
- FDA: -
- CoE: 11621

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xi	Irritant	R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none
Other hazards	Stench

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3. Composition/information on ingredients

- Sulfurol ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers

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which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to Pale Yellow Oily Liquid
• Odor	Beany
• pH value at 10g/l H_2O	N/A
• Boiling point	135 °C at 9 hPa - lit.
• Flash point	112 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25℃	1.196 – 1.210
• Solubility in water	Not Soluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined

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- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods.
  IMDG: Not dangerous goods.
  IATA: Not dangerous goods.
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

Full text of R-phrases referred to under sections 2

Xi	Irritant
R36/37/38	Irritating to eyes, respiratory system and skin.

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16. Other information

- Document Number B-D32040-04
- Creation Date Aug. 12, 15
- Revision 4.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BETA IONONE NATURAL

1. *Identification*

- Chemical name 4-(2,6,6-Trimethyl-1-cyclohexenyl)-3-buten-2-one
- Synonyms β-Ionone
- Molecular Formula $C_{13}H_{20}O$
- Molecular Weight 192.30
- CAS No. 14901-07-6
- FEMA No. 2595
- Einecs No. 232-396-8
- FDA 172.510
- CoE 142

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Hazardous to the aquatic environment (Category 2)	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H411	Toxic to aquatic life with long lasting effects
Precautionary statement(s)	
P273	Avoid release to the environment.
P391	Collect spillage.
P501	Dispose of contents/container to an approved waste disposal plant.

Supplemental Hazard none

- **Other hazards** none

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3. *Composition/information on ingredients*

- β-Ionone ≥95%

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4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.
- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: 2 - 8 °C and protected under nitrogen

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Clear, liquid
• Color	Colorless to pale straw-colored
• Odor	Warm, woody, dry
• PH value at 10g/l H_2O	7
• Boiling point	126 - 128 °C at 16 hPa - lit.
• Flash point	112 °C - closed cup
• Melting point	-35 °C at 1,013 hPa
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	273 °C at 1,010 - 1,017 hPa
• Oxidizing properties	N/A
• Vapor pressure	0.072 hPa at 25 °C
• Specific gravity @25°C	0.940-0.947
• Solubility in water	0.11 g/l at 20 °C
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	No information available.

- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 7,120 mg/kg
  LD50 Dermal - rat - male and female - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 5.09 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 4.03 mg/l - 48 h
Toxicity to algae	EC50 - Desmodesmus subspicatus (green algae) - 22.15 mg/l - 72 h
Toxicity to bacteria	EC50 - Sludge Treatment - 100 - 200 mg/l - 180 min

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3082 IMDG:3082 IATA:3082
- **Shipping Name**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one)
  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one)
  IATA: Environmentally hazardous substance, liquid, n.o.s. (4-(2,6,6-trimethylcyclohex-1-ene-1-yl)- but-3-ene-2-one)
- **Hazard Class**
  ADR/RID:9 IMDG:9 IATA:9

- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number B-N25950-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

UNDECALACTONE GAMMA NATURAL

1. *Identification*

- Chemical name: 5-Heptyldihydro-2(3H)-Furanone; 4-Undecanolide
- Synonyms: Peach Aldehyde; Undeca-1,4-Lactone
- Molecular Formula: $C_{11}H_{20}O_2$
- Molecular Weight: 184.28
- CAS No.: 104-67-6
- FEMA No.: 3091
- Einecs No.: 203-225-4
- FDA: 172.510
- CoE: 179

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system	H335
Long-term (chronic) aquatic hazard (Category 3)	H412

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.
Precautionary statement(s)	
P261	Avoid breathing vapours.
P273	Avoid release to the environment.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- Gamma Undecalactone ≥ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**

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Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slight yellow
• Odor	Fruity, peach
• pH value at 10g/l H_2O	N/A
• Boiling point	164 - 166 °C at 17 hPa - lit.
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.941 – 0.945
• Solubility in water	Insoluble
• Organic solvents	1 ml soluble in 5 ml 60% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined

- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 - Oral - rat- 18500 mg/kg
  LD50 Dermal - Rat - male and female - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity to fish — LC50 - Oncorhynchus mykiss (rainbow trout) - 569 mg/l - 96 h
- Toxicity to daphnia and other aquatic invertebrates — EC50 - Daphnia magna (Water flea) - 5.85 mg/l - 48 h
- Toxicity to algae static test — EC50 - Pseudokirchneriella subcapitata (green algae) -5.94 mg/l - 72 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

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16. Other information

- Document Number: B-N30910-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TERPINYL ACETATE NATURAL

1. *Identification*

- Chemical name: p-Menth-1-en-8-yl Acetate
- Synonyms: p-Menth-1-en-8-ol Acetate; Menthen-1-yl-8 Acetate
- Molecular Formula: $C_{12}H_{20}O_2$
- Molecular Weight: 196.29
- CAS No.: 80-26-2/8007-35-0
- FEMA No.: 3047
- Einecs No.: 201-265-7/232-357-5
- FDA: 172.510
- CoE: 205

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
Precautionary statement(s)	
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Terpinyl Acetate ≥97%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Sweet, refreshing, herbaceous
• PH value at 10g/l H_2O	N/A
• Boiling point	220°C
• Flash point	100°C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.953 - 0.962
• Solubility in water	Insoluble in water
• Organic solvents	1ml in 5ml 70% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 5.075 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

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no data available

- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N30470-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GAMMA OCTALACTONE NATURAL

1. *Identification*

- Chemical name 5-Butyldihydro-2(3H)-furanone; 4-Octanolide
- Synonyms Octa-1,4-lactone
- Molecular Formula $C_8H_{14}O_2$
- Molecular Weight 142.20
- CAS No. 104-50-7
- FEMA No. 2796
- Einecs No. 203-208-1
- FDA 172.510
- CoE 2274

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Gamma Octalactone ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

- Hand — Protective gloves
- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to slightly yellow
- Odor — Sweet, coconut, fruity
- pH value at 10g/l H_2O — N/A
- Boiling point (°C) — 234 °C - lit.
- Flash point (°C) — 113 °C - closed cup
- Melting point (°C) — N/A
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — 0.970-0.980
- Solubility — Insoluble in water; Soluble in alcohol

10. Stability and reactivity

- Chemical Stability — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 4,400 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N27960-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ANISYL ALCOHOL NATURAL

1. *Identification*

- Chemical name: 4-Methoxybenzyl Alcohol; p-Anisyl Alcohol
- Synonyms: Anisic Alcohol
- Molecular Formula: $C_8H_{10}O_2$
- Molecular Weight: 138.17
- CAS No.: 105-13-5
- FEMA No.: 2099
- Einecs No.: 203-273-6
- FDA: 172.510
- CoE: 66

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard	statement(s)
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Anisyl Alcohol ≥99%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in a tightly closed container.Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Floral
• PH value at 10g/l H_2O	N/A
• Boiling point	259 °C
• Flash point	113 °C
• Melting point	23.5 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A

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• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C	1.110 - 1.115
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures.
• Conditions to Avoid	Incompatible materials, strong oxidants.
• Substances to be avoided	Strong oxidizing agents, acids, acid chlorides, acid anhydrides.
• Hazardous decomposition	Carbon monoxide, carbon dioxide
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Dermal - rabbit - 3,000 mg/kg
• Sensitization	Skin - rabbit Result: Skin irritation - 24 h
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number B-N20990-10
- Creation Date Jun. 7, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TRANS, 2-HEXENOIC ACID

1. *Identification*

- Chemical name — Hex-2(trans)-enoic acid
- Synonyms — Acrylic; Beta-Propylacrylic Acid; Hexen-2-Oic Acid
- Molecular Formula — $C_6H_{10}O_2$
- Molecular Weight — 114.14
- CAS No. — 13419-69-7
- FEMA No. — 3169
- Einecs No. — 236-528-5
- FDA — -
- CoE — 11777

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin corrosion (Category 1B) H314

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Danger

Hazard statement(s)

H314 Causes severe skin burns and eye damage.

Precautionary statement(s)

P280 Wear protective gloves.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/ physician.

Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- T, 2-Hexenoic Acid ⩾ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Store under inert gas.

---

8. Exposure controls and personal protection

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Needle-like crystals
• Color	Colorless
• Odor	Fatty acrid musty aroma/sweet on dilution
• pH value at 10g/l H_2O	N/A
• Boiling point	217 °C - lit.
• Flash point	113 °C - closed cup
• Melting point	33 - 37 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	Slightly soluble in water
• Organic solvents	Soluble in ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: 3261 IMDG: 3261 IATA: 3261
- **Shipping Name**
  ADR/RID: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (trans-Hex-2-enoic acid)
  IMDG: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (trans-Hex-2-enoic acid)
  IATA: Corrosive solid, acidic, organic, n.o.s. (trans-Hex-2-enoic acid)
- **Hazard Class**
  ADR/RID: 8 IMDG: 8 IATA: 8
- **Packing Group**
  ADR/RID: II IMDG: II IATA: II

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D31690-10
- Creation Date: Jan. 20, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GAMMA NONALACTONE NATURAL

1. *Identification*

- Chemical name 5-Pentyldihydro-2(3H)-furanone; 4-Nonanolide
- Synonyms Aldehyde C-18; Nona-1,4-lactone
- Molecular Formula $C_9H_{16}O_2$
- Molecular Weight 156.22
- CAS No. 104-61-0
- FEMA No. 2781
- Einecs No. 203-219-1
- FDA 172.510
- CoE 178

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- γ-Nonalactone ≥98%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

Form	Liquid
Color	Colorless to slight yellow
Odor	Coconut
PH value at 10g/l H_2O	N/A
Boiling point	121 - 122 °C at 8 hPa - lit.
Flash point	113 °C - closed cup
Melting point	N/A
Explosive properties	N/A
Lower explosion limit	N/A
Upper explosion limit	N/A
Ignition temperature	N/A
Oxidizing properties	N/A
Vapor pressure	N/A
Specific gravity @25°C	0.958 ~ 0.966
Solubility in water	Insoluble
Organic solvents	1 ml in 5 ml 60% alcohol

10. Stability and reactivity

Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
Substances to be avoided	Metals, strong oxidizing agents, strong bases.
Hazardous decomposition	Carbon dioxide, carbon monoxide.
Hazardous	Will not occur.

11. Toxicological information

Acute toxicity	LD50 Oral - rat - 6,600 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
Sensitization	No information available.
Mutagenicity	No information available.
Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods
- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-N27810-10
- Creation Date May. 24, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DELTA TETRADECALACTONE NATURAL

1. *Identification*

- Chemical name 6-Nonyltetrahydro-2-pyrone
- Synonyms Tetradeca-1,5-lactone
- Molecular Formula $C_{14}H_{26}O_2$
- Molecular Weight 226.36
- CAS No. 2721-22-4
- FEMA No. 3590
- Einecs No. 220-334-2
- CoE 2196

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- δ -Tetradecalactone ≥99%(sum of isomers)

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4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

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Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves

- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to pale yellow
- Odor — Fruity
- PH value at 10g/l H_2O — N/A
- Boiling point — 130 - 135 °C at 7 hPa - lit.
- Flash point — > 113.00 °C - closed cup
- Melting point — N/A
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — 0.931-0.937
- Solubility in water — Insoluble in water
- Organic solvents — 1 mL in 1 mL 95% ethanol

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — N/A
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon oxides
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal

Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods
- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-N35900-10
- Creation Date Jun. 7, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ISOBUTYL PHENYLACETATE NATURAL

1. *Identification*

- Product name: Isobutyl phenylacetate
- Synonyms: 2-Methylpropyl phenylacetate
- Molecular Formula: $C_{12}H_{16}O_2$
- Molecular Weight: 192.25
- CAS No.: 102-13-6
- FEMA No.: 2210
- Einecs No.: 203-007-9
- FDA: 172.510
- CoE: 2160

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Isobutyl phenylacetate ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Rose, honey
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	253 °C - lit.
• Flash point (°C)	113 °C - closed cup
• Melting point (°C)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.984~0.988
• Solubility	Insoluble in water; 1ml in 2ml 80% alc

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat -> 5.000 mg/kg
  LD50 Dermal - rabbit -> 5.000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-N22100-10
- Creation Date — Mar. 30, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

CEDARWOOD OIL

1. *Identification*

- Botanical name Cupressaceae
- Synonyms Cedarwood Oil
- CAS No. 85085-29-6
- FEMA No. 2267
- Einecs No. 285-360-9

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

  Skin irritation (Category 2) H315
- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
Precautionary statement(s)	none
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Cedarwood oil

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Light sensitive. Store under inert gas. Air sensitive.

---

8. Exposure controls and personal protection

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

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• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Pale yellow to yellow
• Odor	Floral-spicy
• pH value at 10g/l H_2O	N/A
• Boiling point	N/A
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.938-0.953
• Solubility in water	N/A
• Organic solvents	1 ml in 4 ml 80% alcohol.

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions. Test for peroxide formation before distillation or evaporation.
• Conditions to Avoid	Heat, flames and sparks. Extremes of temperature and direct.
• Substances to be avoided	Strong oxidizing agents, Strong reducing agents, Strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

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- Acute toxicity — LD50 Oral - rat - > 5,000 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-E22670-10
- Creation Date — Jun. 8, 21
- Revision — 10.0

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MATERIAL SAFETY DATA SHEET

ACETOXY FURANONE

1. *Identification*

- Chemical name: 4-Acetoxy-2,5-Dimethyl-3(2H)-Furanone
- Synonyms: Furaneol Acetate
- Molecular Formula: $C_8H_{10}O_4$
- Molecular Weight: 170.17
- CAS No.: 4166-20-5
- FEMA No.: 3797
- Einecs No.: 435-910-0
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin sensitization (Category 1)	H317
Aquatic Acute (Category 2)	H401
Hazardous to the aquatic environment (Category 2)	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Warning
Hazard statement(s)	
H317	May cause an allergic skin reaction
H401	Toxic to aquatic life
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the 9workplace
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face

	protection.
P302+P352	IF ON SKIN: Wash with plenty of water/…
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 4-Acetoxy-2,5-Dimethyl-3(2H)Furanone ≥ 98%

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4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**

Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Faint Caramel aroma
• PH value at 10g/l H_2O	N/A
• Boiling point	243°C
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A

- Oxidizing properties N/A
- Vapor pressure N/A
- Specific gravity @25°C 1.159-1.167
- Solubility in water Slightly soluble in water
- Organic solvents Soluble in alcohol

10. Stability and reactivity

- Chemical Stability Stable Stable under recommended storage conditions.
- Conditions to Avoid Avoid moisture. Heat. Heat, flames and sparks.
- Substances to be avoided Oxidizing agents
- Hazardous decomposition Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
- Hazardous Will not occur

11. Toxicological information

- Acute toxicity No information available
- Sensitization No information available
- Mutagenicity No information available
- Other Studies No information available

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: 3082 IMDG: 3082 IATA: 3082
- **Shipping Name:**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
  (4-Acetoxy-2,5-Dimethyl-3(2H)-Furanone)

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IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(4-Acetoxy-2,5-Dimethyl-3(2H)-Furanone)

IATA: Environmentally hazardous substance, liquid, n.o.s.
(4-Acetoxy-2,5-Dimethyl-3(2H)-Furanone)

- **Hazard Class**

ADR/RID:9 IMDG:9 IATA:9

- **Packing Group**

ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

no data available

- **Chemical Safety Assessment**

no data available

16. Other information

- Document Number B-D37970-10
- Creation Date Mar. 18, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CINNAMYL ACETATE NATURAL

1. *Identification*

- Chemical name: Cinnamyl Acetate
- Synonyms: 3-Phenylallyl Acetate
- Molecular Formula: $C_{11}H_{12}O_2$
- Molecular Weight: 176.21
- CAS No.: 103-54-8
- FEMA No.: 2293
- Einecs No.: 203-121-9
- FDA: 172.510
- CoE: 208

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Eye irritation (Category 2) H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word: Warning

  Hazard statement(s)

  H319: Causes serious eye irritation.

  Precautionary statement(s)

  P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. *Composition/information on ingredients*

- Cinnamyl Acetate ≥98%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;

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consult a physician if irritation persists

- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Sweet, balsamic, floral
• PH value at 10g/l H_2O	N/A
• Boiling point	265 °C at 1,013 hPa
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.050 ~ 1.054
• Solubility in water	Insoluble.
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	no data available
• Substances to be avoided	Strong oxidizing agents Strong oxidizing agents, Strong bases
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 3,300 mg/kg
• Sensitization	No information available.

- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods.
  IMDG: Not dangerous goods.
  IATA: Not dangerous goods.
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N22930-10
- Creation Date May. 24, 21
- Revision 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

DELTA DECALACTONE

1. *Identification*

- Chemical name 6-Pentyltetrahydro-2-pyrone
- Synonyms Deca-1,5-lactone
- Molecular Formula $C_{10}H_{18}O_2$
- Molecular Weight 170.25
- CAS No. 705-86-2
- FEMA No. 2361
- Einecs No. 211-889-1
- FDA 172.515
- CoE 621
- REACH Registration 01-2119947987-13-0001
- Only representtive Chemical Inspection &Regulation service Limited
- Address Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail) info@cirs-reach.com
- Telephone +00 353 1 477 3708
- Contact Person Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- ð-Decalactone ≥98%

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4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

consult a physician if skin irritation persists

- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

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• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	liquid, clear
• Color	colourless
• Odor	Fruity, buttery, coconut
• PH value at 10g/l H_2O	5.54 at 9.3 g/l at 25 °C - acidic
• Boiling point	117 - 120 °C at 0,03 hPa - lit.
• Flash point	> 113.00 °C - closed cup
• Melting point	-27 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.964~0.971
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Light, moisture, excess heat
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - > 5,000 mg/kg LD50 Dermal - rat - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D23610-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

GAMMA DECALACTONE NATURAL, OPTICAL ACTIVE

1. *Identification*

- Chemical name: 4-Hydroxydecanoic Acid Lactone
- Synonyms: γ-Decalactone; 5-Hexyldihydro-2(3H)-furanone; 5-Hexyloxolan-2-one
- Molecular Formula: $C_{10}H_{18}O_2$
- Molecular Weight: 170.25
- CAS No.: 706-14-9
- FEMA No.: 2360
- Einecs No.: 211-892-8
- FDA: 172.510
- CoE: 2230

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
- **Label elements**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
- **Other hazards**
  This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

---

3. *Composition/information on ingredients*

- γ-Decalactone, optical active ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

- Eyes — Safety glasses
- Hand — Protective gloves
- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to pale yellow liquid
- Odor — Fruity, peach
- PH value at 10g/l H_2O — N/A
- Boiling point — 281℃
- Flash point — 113 °C - closed cup
- Melting point — Melting point/range: < -20 °C - OECD Test Guideline 102
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25℃ — 0.949~0.954
- Solubility in water — Insoluble
- Organic solvents — Soluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — no data available
- Substances to be avoided — Strong oxidizing agents, Bases
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Biodegradability aerobic - Exposure time 28 d Result: 82 % - Readily biodegradable

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-N23601-09
- Creation Date — Feb. 11, 20
- Revision — 9.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product

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MATERIAL SAFETY DATA SHEET

ANISYL ACETATE NATURAL

1. *Identification*

- Chemical name p-Methoxybenzyl Acetate
- Synonyms Anisyl Acetate
- Molecular Formula $C_{10}H_{12}O_3$
- Molecular Weight 180.20
- CAS No. 104-21-2
- FEMA No. 2098
- Einecs No. 203-185-8
- FDA 172.510
- CoE 209

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Anisyl Acetate ≥99%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in a tightly closed container.Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Floral, fruity, balsamic
• PH value at 10g/l H_2O	N/A
• Boiling point	235 °C
• Flash point	113° C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25° C	1.104 - 1.111
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures.
• Conditions to Avoid	Incompatible materials, ignition sources, strong oxidants.
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide
• Hazardous	Will not occur.

11. Toxicological information

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- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

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- Document Number B-N20980-10
- Creation Date Feb. 18, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Quality defines a brand, reputation builds an alliance.

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MATERIAL SAFETY DATA SHEET

BUTYL BUTYRYL LACTATE NATURAL

1. *Identification*

- Chemical name: Butyl 2-butyryloxypropanoate
- Synonyms: Butanoic acid 2-butoxy-1-methyl-2-oxoethyl ester; Butyl butyrolactate
- Molecular Formula: $C_{11}H_{20}O_4$
- Molecular Weight: 216.28
- CAS No.: 7492-70-8
- FEMA No.: 2190
- Einecs No.: 231-326-3
- FDA: 172.510
- CoE: 2107

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Warning

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements none

- **Other hazards** none

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3. Composition/information on ingredients

- Butyl Butyryl Lactate ≥98%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless
• Odor	Mild, buttery, cream
• PH value at 10g/l H_2O	N/A
• Boiling point:	90 °C at 3 hPa - lit.
• Flash point:	113 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @20°C:	0.970 ~ 0.974
• Solubility in water:	Insoluble
• Organic solvents:	Soluble

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.

- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N21900-10

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- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ALPHA HEXYL CINNAMIC ALDEHYDE NATURAL

1. *Identification*

- Chemical name: alpha-Hexylcinnamaldehyde
- Synonyms: α-hexylcinnamaldehyde
- Molecular Formula: $C_{15}H_{20}O$
- Molecular Weight: 216.32
- CAS No.: 101-86-0
- FEMA No.: 2569
- Einecs No.: 202-983-3
- FDA: 172.510
- CoE: 129

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H303
Skin sensitisation (Category 1)	H317
Acute aquatic toxicity (Category 1)	H400

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Warning
Hazard statement(s)	
H303	May be harmful if swallowed
H317	May cause an allergic skin reaction.
H400	Very toxic to aquatic life
H411	Toxic to aquatic life with long-lasting effects
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear protective gloves
Supplemental Hazard	none

Statements

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Alpha Hexyl Cinnamic Aldehyde ≥ 98%(sum of isomer)

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to dark yellow liquid
• Odor	Jasmine
• pH value at 10g/l H_2O	N/A
• Boiling point:	174 - 176 °C at 20 hPa - lit.
• Flash point:	113 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A

- Specific gravity @25°C: 0.953 – 0.959
- Solubility in water: N/A
- Organic solvents: Soluble in most fixed oils; insoluble in gly, prop glycol; 1 mL in 1 mL 90% alcohol.

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

Acute toxicity	LD50 Oral - rat - 3.100 mg/kg
Sensitization	No information available.
Mutagenicity	No information available.
Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

ADR/RID:3082 IMDG:3082 IATA:3082

- **Shipping Name:**
  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (alpha-Hexylcinnamaldehyde)
  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (alpha-Hexylcinnamaldehyde)
  IATA: Environmentally hazardous substance, liquid, n.o.s. (alpha-Hexylcinnamaldehyde)
- **Hazard Class:**
  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group:**
  ADR/RID:III IMDG:III IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

---

16. Other information

- Document Number: B-N25690-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DIFURFURYL DISULPHIDE

1. *Identification*

- Chemical name: Difurfuryl Disulfide
- Synonyms: 2-Furfuryl Disulfide; Bis(2-Furfuryl)Disulfide
- Molecular Formula: $C_{10}H_{10}O_2S_2$
- Molecular Weight: 226.23
- CAS No.: 4437-20-1
- FEMA No.: 3146
- Einecs No.: 224-649-6
- FDA: -
- CoE: 11480

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Difurfuryl Disulfide ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**

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Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Light sensitive. Stench.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses

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- Hand — Protective gloves
- Skin: — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: — Liquid
- Color: — Pale yellowish to dark purple oily liquid
- Odor — Powerful, repulsive sulfuraceous odor
- pH value at 10g/l H_2O — N/A
- Boiling point: — 229 – 230 °C
- Flash point: — 113 °C - closed cup
- Melting point: — 10 - 11 °C - lit.
- Explosive properties: — N/A
- Lower explosion limit: — N/A
- Upper explosion limit: — N/A
- Ignition temperature: — N/A
- Oxidizing properties: — N/A
- Vapor pressure: — N/A
- Specific gravity @25°C: — 1.229-1.248
- Solubility in water: — Slightly soluble in water
- Organic solvents: — Soluble in ethanol

10. Stability and reactivity

- Chemical Stability: — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:3334
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Aviation regulated liquid, n.o.s. (2,2'-[Dithiobis(methylene)]bisfuran)
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:9
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:III

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D31460-09
- Creation Date: May. 27, 21
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

MILK LACTONE

1. *Identification*

• Chemical name	5(6)-Decenoic Acid (mixture)
• Synonyms	Milk Lactone; Decenoic acid
• Molecular Formula	C10H18O2
• Molecular Weight	170.25
• CAS No.	72881-27-7(for mixture) 85392-03-6 (for 5-Decenoic Acid) 85392‑04‑7 (for 6-Decenoic Acid)
• FEMA No.	3742
• Einecs No.	286-861-5 (for 5-Decenoic Acid) 286‑862‑0 (for 6-Decenoic Acid)
• FDA	-
• CoE	-

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Milk Lactone ≥ 98%(sum of isomers)

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless
• Odor	Milk, bitter aroma
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	58
• Flash point (°C)	113
• Melting point (°C)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C	0.916-0.945
• Solubility	Insoluble in water; soluble in alcohol and fixed oils

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D37420-10
- Creation Date: May. 27, 21
- Revision: 10.0

- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DELTA DODECALACTONE

1. *Identification*

- Chemical name: 6-Heptyloxan-2-one
- Synonyms: δ -Dodecalactone
- Molecular Formula: $C_{12}H_{22}O_2$
- Molecular Weight: 198.31
- CAS No.: 713-95-1
- FEMA No.: 2401
- Einecs No.: 211-932-4
- FDA: 172.515
- CoE: 624
- Reach Registration number: 01-2119958757-17-0001
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification according to Regulation (EC) No 1272/2008**

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing.

Supplemental Hazard Statements: none

- **Other hazards**: none

3. Composition/information on ingredients

- Delta Dodecalactone ≥98.0%

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

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Normal measures for preventive fire protection.

- **Storage:**
  Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to yellow
• Odor	Coconut-fruity, buttery on dilution
• PH value at 10g/l H_2O	N/A
• Boiling point:	140 - 141 °C at 1 hPa - lit.
• Flash point:	113 °C - closed cup
• Melting point:	-12 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.942 ~ 0.950
• Solubility in water:	Insoluble
• Organic solvents:	1 ml in 1 ml 95% alcohol

10. Stability and reactivity

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	No information available
• Substances to be avoided:	Strong oxidizing agents
• Hazardous decomposition:	Carbon oxides

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- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 5,000 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-D24010-10
- Creation Date: Apr. 26, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DELTA UNDECALACTONE NATURAL

1. *Identification*

- Chemical name 6-Hexyltetrahydro-2-pyrone
- Synonyms Undeca-1,5-lactone, delta-Undecalactone
- Molecular Formula $C_{11}H_{20}O_2$
- Molecular Weight 184.28
- CAS No. 710-04-3
- FEMA No. 3294
- Einecs No. 211-915-1
- FDA -
- CoE 688

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Warning

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- δ-Undecalactone ≥99%(Sum of isomers)

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Creamy, peach
• PH value at 10g/l H_2O	N/A
• Boiling point	152 - 155 °C at 14.0 hPa - lit.
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.956-0.961
• Solubility in water	N/A
• Organic solvents	1 ml in 1 ml 95% alcohol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	No information available.

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N32940-10
- Creation Date — May. 25, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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Quality defines a brand, reputation builds an alliance.

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MATERIAL SAFETY DATA SHEET

4-METHYL OCTANOIC ACID NATURAL

1. *Identification*

- Chemical name 4-Methyloctanoic acid
- Synonyms Isononanoic acid
- Molecular Formula $C_9H_{18}O_2$
- Molecular Weight 158.24
- CAS No. 54947-74-9
- FEMA No. 3575
- Einecs No. 259-404-2
- FDA -
- CoE 11926

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin corrosion (Category 1B) H314

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Danger

  Hazard statement(s)

  H314 Causes severe skin burns and eye damage

  Precautionary statement(s)

  P280 Wear protective gloves/ protective clothing/ eye protection/ face Protection

  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  P310 Immediately call a POISON CENTER or doctor/ physician

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- 4-Methyloctanoic acid ≥ 98%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Goat, costus, mutton odour
• pH value at 10g/l H_2O	N/A
• Boiling point	149 °C at 29 hPa - lit.
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.903-0.917
• Solubility in water	N/A
• Organic solvents	N/A

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:3265 IMDG:3265 IATA:3265
- **Shipping Name**
  ADR/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. ((±)-4-Methyloctanoic acid)
  IMDG: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. ((±)-4-Methyloctanoic acid)
  IATA: Corrosive liquid, acidic, organic, n.o.s. ((±)-4-Methyloctanoic acid)
- **Hazard Class**
  ADR/RID:8 IMDG:8 IATA:8
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N35750-09
- Creation Date — Feb. 14, 20
- Revision — 9.0

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MATERIAL SAFETY DATA SHEET

5-METHYL-2-PHENYL-2-HEXENAL

1. *Identification*

- Chemical name: 2-Phenyl-5-Methyl-2-Hexenal
- Synonyms: 2-Phenyl-5-methylhex-2-enal, Cocal
- Molecular Formula: $C_{13}H_{16}O$
- Molecular Weight: 188.27
- CAS No.: 21834-92-4
- FEMA No.: 3199
- Einecs No.: 244-602-3
- FDA: -
- CoE: 10365

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

Signal word:

Warning

Hazard statement(s)

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Precautionary statement(s)

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- 5-Methyl-2-Phenyl-2-Hexenal ≥ 92 (sum of (E)-and (Z)-isomers)

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Colorless to slightly yellow
• Odor	Cocoa-like
• pH value at 10g/l H_2O	N/A
• Boiling point:	290 - 291 °C at 1,013 hPa
• Flash point:	113 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	0.963-0.979
• Solubility in water:	Insoluble
• Organic solvents:	Soluble in oils

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D31990-10
- Creation Date: Jun. 8, 21

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- Revision: 10.0
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MATERIAL SAFETY DATA SHEET

5-METHYL QUINOXALINE

1. *Identification*

• Chemical name	5-Methyl Quinoxaline
• Synonyms	5-Methyl-1,4-Benzodiazine
• Molecular Formula	$C_9H_8N_2$
• Molecular Weight	144.18
• CAS No.	13708-12-8
• FEMA No.	3203
• Einecs No.	237-246-5
• FDA	-
• CoE	2271

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 5-Mehyl Quinoxaline ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Yellow to brownness
• Odor	Burnt, roasted, nutty, coffee
• pH value at 10g/l H_2O	N/A
• Boiling point	120 °C at 20 hPa - lit.
• Flash point	113 °C - closed cup
• Melting point	20 - 21 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.124-1.132
• Solubility in water	Soluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.

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- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D32030-10
- Creation Date — May. 25, 21

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MATERIAL SAFETY DATA SHEET

SULFURYL ACETATE

1. *Identification*

- Chemical name: 4-Methyl-5-(2-acetoxyethyl)thiazole
- Synonyms: Sulfuryl Acetate
- Molecular Formula: $C_8H_{11}O_2NS$
- Molecular Weight: 185.25
- CAS No.: 656-53-1
- FEMA No.: 3205
- Einecs No.: 211-515-7
- FDA: -
- CoE: 11620

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Specific target organ toxicity - single exposure (Category 3) H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P271	Use only outdoors or in a well-ventilated area.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statement	none

- **Other hazards** - none

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3. Composition/information on ingredients

- Sulfurol Acetate ≥99%

---

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Clear, liquid
• Color	Colourless to yellow
• Odor	Meaty
• PH value at 10g/l H_2O	N/A
• Boiling point	117 - 118 °C at 8 hPa - lit.
• Flash point	113 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.162-1.170
• Solubility in water	Slightly soluble in water;
• Organic solvents	Soluble

---

10. Stability and reactivity

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- Chemical Stability — Stable under normal temperatures and pressures.
- Conditions to Avoid — Heat, flames and sparks.
- Substances to be avoided — Strong oxidizing agents, Acid chlorides, Acid anhydrides, Reducing agents
- Hazardous decomposition — Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:3334
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Aviation regulated liquid, n.o.s. (2-(4-Methylthiazol-5-yl)ethyl acetate)
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:9
- **Packing Group**
  ADR/RID:- IMDG:- IATA:III

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number: B-D32050-10
- Creation Date: Mar. 31, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

VANILLIN ISOBUTYRATE

1. *Identification*

- Chemical name: 4-Formyl-2-methoxyphenyl-2-methylpropanoate
- Synonyms: 4-Hydroxy-3-methoxybenzaldehyde;4-Hydroxy-m-anisaldehyde-2-methyl propionate
- Molecular Formula: $C_{12}H_{14}O_4$
- Molecular Weight: 222.24
- CAS No.: 20665-85-4
- FEMA No.: 3754
- Einecs No.: 243-956-6
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Vanillin Isobutyrate ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**

If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves

- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless
- Odor — With a heavy, sweet, creamy, vanilla-nutmeg odor
- PH value at 10g/l H_2O — N/A
- Boiling point — 312.9 °C
- Flash point — > 113.00 °C - closed cup
- Melting point — N/A
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — 1.110-1.136
- Solubility in water — Insoluble
- Organic solvents — Soluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — Heat, flames and sparks.
- Substances to be avoided — Strong oxidizing agents, Acid chlorides, Acid anhydridesStrong oxidizing agents, Acid chlorides, Acid anhydrides
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.（RTECS: NP9625000）

12. Ecological information

- No information available.

13. Disposal considerations

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- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-D37540-10
- Creation Date — Jun. 8, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

VANILLYL BUTYL ETHER

1. *Identification*

- Chemical name: 4-(Butoxymethyl)-2-methoxyphenol
- Synonyms: 4-(Butoxymethyl)-2-methoxyphenol; Butyl vanillyl ether
- Molecular Formula: $C_{12}H_{18}O_3$
- Molecular Weight: 210.27
- CAS No.: 82654-98-6
- FEMA No.: 3796
- Einecs No.: 444-010-7
- FDA: Listed
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** - none

---

3. *Composition/information on ingredients*

- 4-(Butoxymethyl)-2-methoxyphenol ≥97%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be resealed and kept upright to prevent leakage.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

- Eyes: Safety glasses
- Hand Protective gloves
- Skin: Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: Liquid
- Color: Colorless to pale yellow viscous
- Odor With a weak, vanillic, acidic odour
- PH value at 10g/l H_2O N/A
- Boiling point: 241°C
- Flash point: > 113.00 °C - closed cup
- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.048 - 1.068
- Solubility in water: Insoluble
- Organic solvents: Soluble

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

---

16. Other information

- Document Number: B-D37960-10
- Creation Date: Jun. 8, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ANISYL ACETONE NATURAL

1. *Identification*

- Chemical name: 4-p-Methoxyphenyl-2-Butanone
- Synonyms: Anisyl Acetone; Bramble ketone; p-Methoxybenzylacetone; Methyloxanone; Raspberry ketone methyl ether
- Molecular Formula: $C_{11}H_{14}O_2$
- Molecular Weight: 178.23
- CAS No.: 104-20-1
- FEMA No.: 2672
- Einecs No.: 203-184-2
- FDA: 172.510
- CoE: 163

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Anisyl Acetone ≥98%

---

4. *First aid measures*

- **Eye contact:**

  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists

- **Skin contact:**

  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists

- **Inhalation:**

  -Remove from exposure and move to fresh air immediately.

-Get medical aid.

- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  -Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

- Eyes: - Safety glasses
- Hand - Protective gloves
- Skin: -Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: Liquid
- Color: Colorless to pale yellow
- Odor Sweet, floral, fruity
- PH value at 10g/l H_2O N/A
- Boiling point: 277°C -lit.
- Flash point: >113°C
- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.042 – 1.048
- Solubility in water: N/A
- Organic solvents: 1 mL in 1 mL 95% alcohol

10. Stability and reactivity

- Chemical Stability: Heating
- Conditions to Avoid Incompatible materials, ignition sources, excess heat
- Substances to be avoided: Oxidizing agents
- Hazardous decomposition: Carbon monoxide, carbon dioxide
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Oral - rat - > 5.000 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N26720-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ANISIC ALDEHYDE NATURAL

1. *Identification*

- Chemical name 4-Methoxybenzaldehyde
- Synonyms p-Anisaldehyde; Aubepine
- Molecular Formula $C_8H_8O_2$
- Molecular Weight 136.15
- CAS No. 123-11-5
- FEMA No. 2670
- Einecs No. 204-602-6
- FDA 172.510
- CoE 103

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Anisic Aldehyde ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10 ℃) DARK AREA.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

- Hand — Protective gloves
- Skin — Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to slightly yellow
- Odor — Anise
- pH value at 10g/l H_2O — 7 at 2 g/l at 20 °C
- Boiling point — 248 °C -lit
- Flash point — 116 °C - closed cup
- Melting point — -1 °C
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — 77 hPa at 160 °C
  < 1 hPa at 20 °C
- Specific gravity @25°C — 1.119-1.123
- Solubility in water — N/A
- Organic solvents — 1 mL in 3 mL 60% alcohol

---

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
  Test for peroxide formation before distillation or evaporation.
- Conditions to Avoid — Heat, flames and sparks. Extremes of temperature and direct.
- Substances to be avoided — Strong oxidizing agents, Strong reducing agents, Strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

---

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 3,210 mg/kg
  LD50 Dermal - rabbit - > 5,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N26700-10
- Creation Date: Jun. 7, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ALPHA IONONE NATURAL

1. *Identification*

- Chemical name 4-(2,6,6-Trimethyl-2-cyclohexenyl)-3-buten-2-one
- Synonyms alpha-Cyclocitrylideneacetone
- Molecular Formula $C_{13}H_{20}O$
- Molecular Weight 192.30
- CAS No. 127-41-3
- FEMA No. 2594
- Einecs No. 204-841-6
- FDA 172.510
- CoE 141

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Respiratory sensitization (Category 1) H334

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Danger

Hazard statement(s)

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- α-Ionone ≥95%

---

4. *First aid measures*

- **Eye contact:**

-Rinse immediately with tap water for 10 minutes open eyelids forcibly;

-consult a physician if irritation persists

- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Clear, viscous liquid
• Color	light yellow
• Odor	Woody, violet
• PH value at 10g/l H_2O	N/A
• Boiling point	259 - 263 °C - lit.
• Flash point	118 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	0.927-0.933
• Solubility in water	N/A
• Organic solvents	1 mL in 10 ml 60% alcohol

10. *Stability and reactivity*

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Light
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon oxides
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Intraperitoneal - mouse - 2,277 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N25940-10
- Creation Date — May. 27, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

4- BUTYROXY-2, 5-DIMETHYL-3(2H)-FURANONE

1. *Identification*

- Chemical name: 4-Butyroxy-2,5-Dimethyl-3(2H)-Furanone
- Synonyms: Furaneol Butyrate
- Molecular Formula: $C_{10}H_{14}O_4$
- Molecular Weight: 198.22
- CAS No.: 114099-96-6
- FEMA No.: 3970
- Einecs No.: -
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
Precautionary statement(s)	none
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 4-Butyroxy-2,5-Dimethyl-3(2H)Furanone ≥ 98%

---

4. *First aid measures*

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- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Spicy, sweet aroma
• PH value at 10g/l H_2O	N/A
• Boiling point	287°C
• Flash point	123 °C - closed cup
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.090-1.103
• Solubility in water	Insoluble in water
• Organic solvents	Soluble in alcohol

10. Stability and reactivity

• Chemical Stability	Stable Stable under recommended storage conditions.
• Conditions to Avoid	Avoid moisture. Heat. Heat, flames and sparks.
• Substances to be avoided	Oxidizing agents
• Hazardous decomposition	Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
• Hazardous	Will not occur

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11. Toxicological information

- Acute toxicity — No information available
- Sensitization — No information available
- Mutagenicity — No information available
- Other Studies — No information available

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D39700-10
- Creation Date — May. 24, 21
- Revision — 10.0

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MATERIAL SAFETY DATA SHEET

CINNAMIC ALDEHYDE NATURAL

1. *Identification*

- Chemical name: 3-Phenyl-2-propenal
- Synonyms: Benzylidene acetaldehyde; Cinnamal
- Molecular Formula: C_9H_8O
- Molecular Weight: 132.16
- CAS No.: 104-55-2
- FEMA No.: 2286
- Einecs No.: 203-213-9
- FDA: 182.60
- CoE: 102

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Skin sensitization (Category 1)	H317
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word: Warning

Hazard statement(s)

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

- **Other hazards** **none**

3. Composition/information on ingredients

- Cinnamic Aldehyde ≥98.0%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of

electrostatic charge.

- **Storage:**
  Keep in tightly closed container in a cool and dry place, protected from light and under Nitrogen

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Yellow
• Odor	Cinnamon, burning aromatic taste
• PH value at 10g/l H_2O	N/A
• Boiling point	248 °C at 1,013 hPa
• Flash point	125 °C - open cup
• Melting point	-7.5 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25℃	1.046 - 1.050
• Solubility in water	1 g in 700 ml water
• Organic solvents	1 ml in 5 ml 60% alcohol

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — No data available
- Substances to be avoided — Strong oxidizing agents, Strong bases
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 2,220 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group** .
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

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no data available

- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-N22860-09
- Creation Date Feb. 17, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Penta International Corporation
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www.pentamfg.com | E-mail: sales@pentamfg.com

SAFETY DATA SHEET

Revision Date: 11/01/2020
Print Date: 7/09/2021

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	L-MONOMENTHYL GLUTARATE
Product Number	13-80950
Brand	Penta
Identified Uses	Manufacture of substances
Company	Penta International Corporation 50 Okner Parkway Livingston NJ 07039-1604 U.S.A.
Telephone	(973)740-2300
Fax	(973)740-1839
Emergency Phone	(800)424-9300 24-Hrs

2. HAZARD(S) IDENTIFICATION

Emergency Overview

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Dermal (Category 5)
Acute toxicity, Oral (Category 5)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram: 

Signal word	Warning
Hazard statement(s)	
H303 H313	May be harmful if swallowed or in conatct with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P302 P352	IF ON SKIN: Wash with plenty of soap and water.
P304 P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 P351 P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
P321	Specific treatment (see supplemental first aid instructions on this label).
P332 P313	If skin irritation occurs: Get medical advice/ attention.
P337 P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification	
Health hazard	1
Flammability	1
Physical hazards	1

NFPA Rating	
Health hazard	1
Fire	1
Reactivity Hazard	0

Potential Health Effects	
Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

SYNONYM	N/A
Formula	C15 H25 O4
Molecular Weight	270.37 g/mol

CAS-No	EC-No	Index-No.	Concentration
220621-22-7	N/A	N/A	N/A

4. FIRST-AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. Do NOT induce vomiting.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Normal measures for preventive fire protection. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and compontents tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the conentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	LIQUID
Colour	COLORLESS CLEAR

Safety data

pH	no data available
Melting point (°C)	no data available
Boiling point (°C)	301
Flash point (°F) Closed cup	>200
Ignition temperature	no data available
Autoignitiontemperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure (mm Hg @20 °C)	no data available
Density @25 °C	1.030
Water solubility	INSOLUBLE
Partition coefficient: n-octanol/water	no data available
Relative vapourdensity	no data available
Odor	MINTY MENTHOL
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50 - no data available
Inhalation LC50 - no data available
Dermal LD50 - no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable. possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
The substance or mixture is kown to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed

professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods.

IMDG
Not dangerous goods.

IATA
Not dangerous goods.

15. REGULATORY INFORMATION

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title Ill, Section 313.

SARA 311/312 Hazards
No SARA hazards

Massachusetts Right To Know Component
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Component
No components are subject to the Pennsylvania Right to Know Act.

New Jersey Right To Know Component
No components are subject to the New Jersey Right to Know Act.

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER CATEGORIES

Safety Data Sheet prepared by: Penta

The information in this SDS was obtained from current and reliable sources. However, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions for use, handling, storage and disposal of this product are beyond Penta's control, it is the responsibility of the user both to determine safe conditions for use of this product and to assume liability for loss, damage, or expense arising out of the products improper use. No warranty expressed or implied regarding the product described herein will be created by or inferred from any statement or omission in the SDS. Various federal, state, or provincial agencies may have specific regulations concerning the transportation, handling, storage, use, or disposal of this product which may not be reflected in the SDS. The user should review these regulations to ensure full compliance.

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MATERIAL SAFETY DATA SHEET

TRIACETIN NATURAL

1. *Identification*

- Chemical name: Triacetin
- Synonyms: Glyceryl triacetate; 1,2,3-Triacetylglycerol
- Molecular Formula: $C_9H_{14}O_6$
- Molecular Weight: 218.21
- CAS No.: 102-76-1
- FEMA No.: 2007
- Einecs No.: 203-051-9
- FDA: 175.300 / 175.320
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Triacetin ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Oily liquid
• Color	Colorless
• Odor	Slight, ethereal, fruity odor
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	258~270
• Flash point (°C)	138
• Melting point (°C)	3
• Explosive properties	N/A
• Lower explosion limit	1,05 %(V)
• Upper explosion limit	7,73 %(V)
• Ignition temperature	432 °C
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C	1.154 - 1.158
• Solubility	Moderately soluble in water; miscible in alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 3.000 mg/kg LD50 Dermal - rabbit - > 2.000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N20070-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ALPHA AMYL CINNAMALDEHYDE NATURAL

1. *Identification*

- Chemical name: alpha-Pentylcinnamaldehyde
- Synonyms: Amylcinnamaldehyde; Amyl Cinnamal; alpha-Amyl-beta-Phenylacrolein
- Molecular Formula: $C_{14}H_{18}O$
- Molecular Weight: 202.30
- CAS No.: 122-40-7
- FEMA No.: 2061
- Einecs No.: 204-541-5
- FDA: 172.510
- CoE: 128

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin sensitisation (Category 1),	H317
Chronic aquatic toxicity (Category 2),	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects
Precautionary statement(s)	
P273	Avoid release to the environment.
P280	Wear protective gloves.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- alpha-Amyl Cinnamaldehyde ≥97%

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**

  Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking.

  Take measures to prevent the build up of electrostatic charge.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

  Recommended storage temperature: 2 - 8 °C

  Air sensitive.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Liquid
• Color:	Yellow
• Odor	Strong, floral, jasmine on dilution, spicy
• PH value at 10g/l H_2O	N/A
• Boiling point:	287-290 °C -lit.
• Flash point:	146 °C
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A

- Vapor pressure: 0.1 hPa at 50 °C
- Specific gravity @25°C: 0.963 - 0.968
- Solubility in water: ca.8.6 g/l
- Organic solvents: Soluble

10. Stability and reactivity

- Chemical Stability: Stable under normal temperatures and pressures.
- Conditions to Avoid: No information available.
- Substances to be avoided: Strong bases, Strong oxidizing agentsStrong oxidizing agents
- Hazardous decomposition: Carbon monoxide, carbon dioxide
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 3.730 mg/kg
  LD50 Dermal - rabbit - > 2,000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity to fish: LC50 - Danio rerio (zebra fish) - 3 mg/l - 96 h
  (OECD Test Guideline 203)
  Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 1.1 mg/l - 48 h
  Toxicity to algae: EC50 - Algae - 1.89 mg/l - 72 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID: 3082 IMDG: 3082 IATA: 3082

- **UN proper shipping name**
  ADR/RID:
  ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (α-Amylcinnamaldehyde)
  IMDG:
  ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (α-Amylcinnamaldehyde)
  IATA:
  Environmentally hazardous substance, liquid, n.o.s. (α-Amylcinnamaldehyde)
- **Transport hazard class(es)**
  ADR/RID: 9 IMDG: 9 IATA: 9
- **Packaging group**
  ADR/RID: III IMDG: III IATA: III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

---

16. Other information

- Document Number: B-N20610-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

TRIETHYL CITRATE

1. *Identification*

- Chemical name 1,2,3-Triethyl 2-hydroxypropane-1,2,3-tricarboxylate
- Synonyms Ethyl citrate; Citroflex 2
- Molecular Formula $C_{12}H_{20}O_7$
- Molecular Weight 276.28
- CAS No. 77-93-0
- FEMA No. 3083
- Einecs No. 201-070-7
- FDA 175.300
- CoE 11762

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
- **Label elements**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Triethyl citrate ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**

  Get medical aid. Wash mouth out with water.

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5. *Fire-fighting measures*

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- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form	Oily liquid
• Color	Colorless to pale yellow
• Odor	Bitter taste; little odour
• PH value at 10g/l H_2O	N/A

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• Boiling point	235° C at 200 hPa
• Flash point	155 °C - closed cup
• Melting point	< -39.99 °C - OECD Test Guideline 102
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 107° C
• Specific gravity @25° C	1.135-1.139
• Solubility in water	Soluble in water
• Organic solvents	Slightly soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 5,900 mg/kg LC50 Inhalation - rat - 6 h - 1300 ppm LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h
Toxicity to algae Growth inhibition	EC50 - Pseudokirchneriella subcapitata (green algae) - > 100 mg/l - 72 h

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-D30830-09
- Creation Date Apr. 21, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BENZYL BENZOATE NATURAL

1. *Identification*

- Chemical name Benzyl Benzoate
- Synonyms -
- Molecular Formula $C_{14}H_{12}O_2$
- Molecular Weight 212.24
- CAS No. 120-51-4
- FEMA No. 2138
- EINECS No. 204-402-9
- FDA 172.510
- CoE 262

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Acute aquatic toxicity (Category 1)	H400
Chronic aquatic toxicity (Category 2)	H411

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P273	Avoid release to the environment.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
Supplemental Hazard Statements	None

- **Other hazards** none

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3. *Composition/information on ingredients*

- Benzyl Benzoate ≥99%

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4. *First aid measures*

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- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	colorless
• Odor	slight, aromatic
• PH value at 10g/l H_2O	N/A
• Boiling point	323 - 324 °C - lit.
• Flash point	158 °C - closed cup
• Melting point	17 - 20 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	480°C
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 125 °C
• Specific gravity @25°C	1.116~1.120
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Incompatible materials, strong oxidants.
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rabbit - 1,680 mg/kg
  LD50 Dermal - rabbit - 4,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

  Toxicity to fish — LC50 - Danio rerio (zebra fish) - 0.29 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:3082 IMDG:3082 IATA:3082
- **Shipping Name**

  ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Benzyl benzoate)

  IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Benzyl benzoate)

  IATA: Environmentally hazardous substance, liquid, n.o.s. (Benzyl benzoate)
- **Hazard Class**

  ADR/RID:9 IMDG:9 IATA:9
- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

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- Document Number B-N21380-10
- Creation Date May. 27, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DIETHYL SUCCINATE

1. *Identification*

- Chemical name: Diethyl butanedioate
- Synonyms: Diethyl ethanedicarboxylate; Ethyl succinate
- Molecular Formula: $C_8H_{14}O_4$
- Molecular Weight: 174.20
- CAS No.: 123-25-1
- FEMA No.: 2377
- Einecs No.: 204-612-0
- FDA: 172.515
- CoE: 438

---

2. *Hazards Identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Diethyl Succinate ≥ 99%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves

- Skin: Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: Liquid
- Color: Colorless
- Odor: Faint pleasant odour
- pH value at 10g/l H_2O: N/A
- Boiling point (°C): 91 °C - closed cup
- Flash point (°C): 218 °C - lit.
- Melting point (°C): -20 °C - lit.
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: 1.036-1.040
- Solubility: 1 mL in 50 mL water; miscible in alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 8,530 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish: LC50 - Pimephales promelas (fathead minnow) - 140 mg/l - 96 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal

Incinerate in qualified installation with flue gas scrubbing

14. Transport Information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. *Regulatory information*

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D23770-04
- Creation Date: Mar. 15, 19
- Revision: 4.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PYRAZINE MIXTURE NATURL

1. *Identification*

- Chemical name: Mixture of Pyrazines
- Synonyms: -
- Molecular Formula: $C_6H_8N_2$
- Molecular Weight: 108.14
- CAS No.: -
- FEMA No.: -
- Einecs No.: -
- FDA: -
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- Pyrazine Mixture

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  hygroscopic

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale yellow
• Odor	Nutty, roasted-nuts
• pH value at 10g/l H_2O	N/A
• Boiling point	N/A
• Flash point	55 °C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity(25°C)	0.980 – 0.985
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

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- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (Pyrazine Mixture)
  IMDG: FLAMMABLE LIQUID, N.O.S. (Pyrazine Mixture)
  IATA: Flammable liquid, n.o.s. (Pyrazine Mixture)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N72730-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PYRAZINE MIXTURE NATURL

1. *Identification*

- Chemical name: Mixture of Pyrazines
- Synonyms: -
- Molecular Formula: $C_6H_8N_2$
- Molecular Weight: 108.14
- CAS No.: -
- FEMA No.: -
- Einecs No.: -
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3)	H226
Acute toxicity, Oral (Category 4)	H302

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H226	Flammable liquid and vapour
H302	Harmful if swallowed.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- Pyrazine Mixture

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  hygroscopic

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to yellow
• Odor	Bitter, Nutty
• pH value at 10g/l H_2O	N/A
• Boiling point	N/A
• Flash point	59 °C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity(25°C)	0.965-0.975
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

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- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:1993 IMDG:1993 IATA:1993
- **Shipping Name**
  ADR/RID: FLAMMABLE LIQUID, N.O.S. (Pyrazine Mixture)
  IMDG: FLAMMABLE LIQUID, N.O.S. (Pyrazine Mixture)
  IATA: Flammable liquid, n.o.s. (Pyrazine Mixture)
- **Hazard Class**
  ADR/RID:3 IMDG:3 IATA:3
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

• Document Number	B-N72731-11
• Creation Date	Jan. 21, 22
• Revision	11.0
• Disclaimer	The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PYRAZINE MIXTURE NATURL

1. *Identification*

- Chemical name: Mixture of Pyrazines
- Synonyms: -
- Molecular Formula: $C_6H_8N_2$
- Molecular Weight: 108.14
- CAS No.: -
- FEMA No.: -
- Einecs No.: -
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation
Precautionary statement(s)	
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Pyrazine Mixture

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  hygroscopic

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to pale brown
• Odor	Nutty, cocoa, chocolate, burnt notes
• pH value at 10g/l H_2O	N/A
• Boiling point	N/A
• Flash point	62°C
• Melting point	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity(20°C)	0.970-0.980
• Solubility in water	N/A
• Organic solvents	Soluble

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N72732-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

D-BORNEOL NATURAL

1. *Identification*

- Chemical name: (6S)-1,7,7-trimethylbicyclo[2.2.1]heptan-6-ol
- Synonyms: 2-Bornanol; Borneo Camphor; Bornyl Alcohol; 2-Camphanol
- Molecular Formula: $C_{10}H_{18}O$
- Molecular Weight: 154.25
- CAS No.: 464-43-7
- FEMA No.: -
- Einecs No.: 207-352-6
- FDA: -
- CoE: -

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2. *Hazards Identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Flammable solids (Category 2) H228

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H228 Flammable solid

  Precautionary statement(s)

  P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- D-Borneol ≥95%

---

4. *First aid measures*

- **Eye contact:**

  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;

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-consult a physician if irritation persists

- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

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6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition -No smoking. Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Keep container tightly closed in a dry and well-ventilated place. Store in cool place.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Crystalline
• Color:	white to off-white
• Odor	piney, camphoraceous
• PH value at 10g/l H_2O	N/A
• Boiling point:	N/A
• Flash point:	65 °C - closed cup
• Melting point:	202 - 206 °C
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	N/A
• Solubility in water:	Insoluble
• Organic solvents:	Soluble

10. Stability and reactivity

• Chemical Stability:	Stable under recommended storage conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Strong oxidizing agents
• Hazardous decomposition:	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 5,800 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

  Toxicity to fish — LC50 - Pimephales promelas (fathead minnow) - 67.8 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14 . Transport Information

- **UN number**

  ADR/RID: 1312 IMDG: 1312 IATA: 1312
- **UN proper shipping name**

  ADR/RID: BORNEOL
  IMDG: BORNEOL
  IATA: Borneol
- **Transport hazard class(es)**

  ADR/RID: 4.1 IMDG: 4.1 IATA: 4.1
- **Packaging group**

  ADR/RID: III IMDG: III IATA: III

15. *Regulatory Information*

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N90730-11
- Creation Date: Jan. 21, 22
- Revision: 11.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

D-CAMPHOR NATURAL

1. *Identification*

- Chemical name: dl-Boman-2-one
- Synonyms: 2-Bornanone, 2-Camphanone, Formosa camphor, Laurel camphor
- Molecular Formula: $C_{10}H_{16}O$
- Molecular Weight: 152.24
- CAS No.: 464-49-3
- FEMA No.: 2230
- Einecs No.: 207-355-2
- FDA: 172.510
- CoE: 140

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Flammable solids (Category 2)	H228
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H228	Flammable solid
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P302 + P352	IF ON SKIN: Wash with plenty of water
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

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- **Other hazards**
  Rubefacient.

3. Composition/information on ingredients

D-camphor ⩾ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of ignition- No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystal or fused mass
• Color	White to gray translucent
• Odor	Minty ethcreal
• PH value at 10g/l H_2O	N/A
• Boiling point	209 °C at 1,013 hPa
• Flash point:	66°C - closed cup
• Melting point	178 - 182 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	0.6 %(V)
• Upper explosion limit	3.5 %(V)
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	5 hPa at 70 °C
• Specific gravity @25°C	N/A
• Solubility in water	Insoluble
• Organic solvents	Insoluble in most fixed oils, prop glycol; 1 mL in 1 mL 95% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - mouse - 1,310 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information

12. Ecological information

- **Toxicity**

  Toxicity to fish — LC50 - Danio rerio (zebra fish) - 36 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:2717 IMDG:2717 IATA:2717
- **Shipping Name**

  ADR/RID: CAMPHOR
  IMDG: CAMPHOR
  IATA: Camphor
- **Hazard Class**

  ADR/RID:4.1 IMDG:4.1 IATA:4.1
- **Packing Group**

  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number — B-N22300-11
- Creation Date — Jan. 21, 22
- Revision — 11.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

GUAIACOL NATURAL

1. *Identification*

- Chemical name: o-Methoxyphenol
- Synonyms: Guaiacol; 1-Hydroxy-2-methoxybenzene; o-Hydroxyanisole
- Molecular Formula: $C_7H_8O_2$
- Molecular Weight: 124.14
- CAS No.: 90-05-1
- FEMA No.: 2532
- Einecs No.: 201-964-7
- FDA: 172.510
- CoE: 173

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
Precautionary statement(s)	
P280	Wear eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Guaiacol ≥99%

4. First aid measures

- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**

  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

  Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Handle and store under inert gas. Air, light, and moisture sensitive.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	- Safety glasses
• Hand	- Protective gloves
• Skin:	-Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Crystal or Liquid
• Color:	Colorless to amber
• Odor	Powerful, smoke-like, somewhat medicinal odour
• PH value at 10g/l H_2O	N/A
• Boiling point:	205 °C - lit.
• Flash point:	82 °C - closed cup
• Melting point:	26 - 29 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	0.15 hPa at 25 °C
• Specific gravity @25°C:	1.129 – 1.140
• Solubility in water:	Slightly soluble
• Organic solvents:	Soluble

10. Stability and reactivity

- Chemical Stability: Stable under recommended storage conditions.
- Conditions to Avoid: Light. Air
- Substances to be avoided: Strong oxidizing agents, Strong bases
- Hazardous decomposition: Carbon dioxide
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 520 mg/kg
  LD50 Dermal - rabbit - 4.600 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 25.9 mg/l - 48 h
Toxicity to algae	EC50 - Pseudokirchneriella subcapitata - > 100 mg/l - 72 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-

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- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-N25320-09
- Creation Date: Feb. 12, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ALPHA TERPINEOL NATURAL, -65 DEGREE

1. *Identification*

- Chemical name: p-Menth-1-en-8-ol
- Synonyms: 1-p-Menthen-8-ol
- Molecular Formula: $C_{10}H_{18}O$
- Molecular Weight: 154.25
- CAS No.: 98-55-5;10482-56-1
- FEMA No.: 3045
- Einecs No.: 202-680-6; 233-986-8
- FDA: 172.510
- CoE: 62

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**
  Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements: none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Alpha Terpineol ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Viscous liquid (high-purity material may solidify)
• Color	Colorless
• Odor	Lilac
• PH value at 10g/l H_2O	N/A
• Boiling point	217
• Flash point	90℃
• Melting point	31~35℃
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A

• Specific gravity @25°C	0.930 - 0.936
• Solubility in water	Slightly soluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 3.200 mg/kg LD50 Oral - mouse - 2.830 mg/kg LD50 Intramuscular - mouse - 2.000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID:- IMDG:- IATA:-

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- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number B-N30450-09
- Creation Date May. 30, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

FURANONE ETHYL ETHER

1. *Identification*

- Chemical name 4-Ethoxy-2,5-Dimethyl-3(2H)-Furanone
- Synonyms -
- Molecular Formula $C_8H_{12}O_3$
- Molecular Weight 156.18
- CAS No. 65330-49-6
- FEMA No. 4104
- Einecs No. 265-701-8
- FDA 172.515
- CoE -

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- Furanone Ethyl Ether ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

- Hand — Protective gloves
- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Liquid
- Color — Colorless to pale yellow
- Odor — Sweet, carmellic, burnt sugar
- pH value at 10g/l H_2O — N/A
- Boiling point — 251°C
- Flash point — 89°C
- Melting point — N/A
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — 1.039-1.052
- Solubility — Insoluble in water, soluble in ethanol

10. Stability and reactivity

- Chemical Stability — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-D41040-04
- Creation Date: May. 24, 21
- Revision: 4.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

STRAWBERRY FURANONE NATURAL

1. *Identification*

- Chemical name: 4-Hydroxy-2,5-Dimethyl-3(2H)-Furanone
- Synonyms: Furaneol; Furanone
- Molecular Formula: $C_6H_8O_3$
- Molecular Weight: 128.13
- CAS No.: 3658-77-3
- FEMA No.: 3174
- Einecs No.: 222-908-8
- FDA: -
- CoE: 536
- REACH Registration number: 01-2120754473-52-0001
- Registered use: Formulation/Uses at industrial sites/Uses by professional workers
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word: Warning

  Hazard statement(s)

  H302: Harmful if swallowed.

  Precautionary statement(s)

  P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth

  Supplemental Hazard statements: none

- **Other hazards**: none

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3. Composition/information on ingredients

- 4-Hydroxy-2,5-Dimethyl-3(2H)Furanone ≥ 99.5%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Keep in tightly closed container in a cool and dry place, protected from light and under Nitrogen

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Solid
• Color	White to pale yellow
• Odor	Fruity, Strawberry, Caramel
• pH value at 10g/l H_2O	N/A
• Boiling point	215.5 °C
• Flash point	94 °C
• Melting point	75 – 80℃
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	N/A
• Organic solvents	1 g in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - mouse - 1,608 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N31740-09
- Creation Date — Jan. 13, 20
- Revision — 9.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

GLYCINE NATURAL

1. *Identification*

- Product name: Glycine
- Synonyms: Aminoacetic acid;Aminoethanoic acid; Glycoll
- Molecular Formula: $C_2H_5NO_2$
- Molecular Weight: 75.07
- CAS No.: 56-40-6
- FEMA No.: 3287
- Einecs No.: 200-272-2
- FDA: 172.510
- CoE: 11771

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** - none

---

3. *Composition/information on ingredients*

- Glycine ≥ 98.0%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Cryst powder
• Color:	White
• Odor	Odorless
• pH value at 10g/l H_2O	N/A

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- Boiling point: N/A
- Flash point: 99.5
- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Solubility in water: Soluble in water
- Organic solvents: Slightly soluble in ether

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID:- IMDG:- IATA:-

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- **Shipping Name:**

  ADR/RID: Not a dangerous goods

  IMDG: Not a dangerous goods

  IATA: Not a dangerous goods

- **Hazard Class:**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group:**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available

Chemical Safety Assessment

No data available

16. Other information

- Document Number: B-N32870-10
- Creation Date: Jan. 5, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

ETHYL MALTOL

1. *Identification*

• Chemical name	2-Ethyl-3-Hydroxy-4-Pyrone
• Synonyms	2-Ethyl-3-Hydroxy-4H-Pyran-4-one; 2-Ethylpyromeconic
• Molecular Formula	$C_7H_8O_3$
• Molecular Weight	140.14
• CAS No.	4940-11-8
• FEMA No.	3487
• Einecs No.	225-582-5
• FDA	172.515
• CoE	692

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

  Classification according to EU Directives 67/548/EEC or 1999/45/EC

  Xn Harmful R22

  For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  Precautionary statement(s) none

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Ethyl Maltol ⩾99%

---

4. *First aid measures*

- **Eye contact:**

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Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls and personal protection

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

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• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	White, crystalline powder
• Color	White
• Odor	Cotton-candy, sweet, fruitlike flavor in dilute solution
• pH value at 10g/l H_2O	N/A
• Boiling point	289℃
• Flash point	100℃
• Melting point	89 - 92 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	1 g soluble in 55 ml water
• Organic solvents	1 g soluble in 10 ml ethanol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Oral - rat - 1,150 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.

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- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

Full text of R-phrases referred to under sections 2

Xn	Harmful
R22	Harmful if swallowed.

16. Other information

- Document Number — B-A34870-05
- Creation Date — Nov. 25, 16
- Revision — 5.0

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- Disclaimer

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2. Maltol

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MATERIAL SAFETY DATA SHEET

ETHYL CYCLOPENTENOLONE

1. *Identification*

- Chemical name: 3-Ethylcyclopentane-1,2-Dione
- Synonyms: 3-Ethyl-2-Hydroxy-2-Cyclopenten-1-one; 3-Ethyl-2-cyclopenten-2-ol-1-one
- Molecular Formula: $C_7H_{10}O_2$
- Molecular Weight: 126.16
- CAS No.: 21835-01-8
- FEMA No.: 3152
- Einecs No.: 244-606-5
- FDA: -
- CoE: 759

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin sensitisation (Category 1) H317

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

  

  Signal word: Warning

  Hazard statement(s)

  H317: May cause an allergic skin reaction.

  Precautionary statement(s)

  P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

  P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.

  Supplemental Hazard Statements: none

  Other hazards: none

---

3. *Composition/information on ingredients*

- Ethyl Cyclopentenolone ⩾97%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers

which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: 2 - 8 °C
Light sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystal
• Color	Colorless to pale yellow
• Odor	Maple, caramel, smoky, coffee-like
• pH value at 10g/l H_2O	N/A
• Boiling point	78 – 80 °C
• Flash point	100°C
• Melting point	40-49 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	Soluble
• Organic solvents	Soluble in ethanol

10. Stability and reactivity

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• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

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This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D31520-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2-ACETYL PYRAZINE NATURAL

1. *Identification*

- Chemical name: 2-Acetylpyrazine
- Synonyms: Methyl Pyrazinyl Ketone; Acetylpyrazine
- Molecular Formula: $C_6H_6N_2O$
- Molecular Weight: 122.13
- CAS No.: 22047-25-2
- FEMA No.: 3126
- Einecs No.: 244-753-5
- FDA: -
- CoE: 2286

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Acetyl Pyrazine ≥ 99%

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

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• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystals
• Color	Colorless to pale yellow
• Odor	Popcorn
• pH value at 10g/l H_2O	N/A
• Boiling point	212.9 °C
• Flash point	N/A
• Melting point	75 - 78 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	N/A
• Organic solvents	1 g in 20 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.

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- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N31260-09
- Creation Date — Jan. 8, 20
- Revision — 9.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

RASPBERRY KETONE NATURAL

1. *Identification*

- Chemical name 4-(p-Hydroxyphenyl)-2-butanone
- Synonyms Raspberry Ketone
- Molecular Formula $C_{10}H_{12}O_2$
- Molecular Weight 164.20
- CAS No. 5471-51-2
- FEMA No. 2588
- Einecs No. 226-806-4
- FDA 172.510
- CoE 755
- REACH Registration number 01-2120081921-55-0002
- Only representtive Chemical Inspection &Regulation service Limited
- Address Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail) info@cirs-reach.com
- Telephone +00 353 1 477 3708
- Contact Person Cyndy

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Raspberry Ketone ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists

- **Skin contact:**

  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

consult a physician if skin irritation persists

- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid formation of dust and aerosols.

  Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystalline
• Color	Light yellow
• Odor	Raspberry
• PH value at 10g/l H_2O	N/A
• Boiling point	292 °C
• Flash point	N/A
• Melting point	82-84 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	N/A
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	No information available.
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon oxides
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.

- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number** IMDG:- IATA:-
  ADR/RID:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N25880-09
- Creation Date — Jan. 17, 20
- Revision — 9.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL CYCLOPENTENOLONE NATURAL

1. *Identification*

- Chemical name: 3-Methylcyclopentane-1,2-Dione
- Synonyms: Cyclotene; 2-Hydroxy-3-methyl-2-cyclopenten-1-one; Maple lactone
- Molecular Formula: $C_6H_8O_2$
- Molecular Weight: 112.13
- CAS No.: 765-70-8 / 80-71-7
- FEMA No.: 2700
- Einecs No.: 212-154-8 / 201-303-2
- FDA: 172.510
- REACH registration number: 01-2120779409-38-0000
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to EU regulation 1907/2006

Acute Toxicity (Category 4)	H302
Eye Damage (Category 1)	H318
Skin Sensitive (Category 1)	H317

- **Label elements**

Labelling according EU regulation 1907/2006

Pictogram

Signal word	Danger
Hazard statement(s)	
H318	Causes serious eye damage.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.

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Precautionary statement(s)	
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/…
P264	Wash ... thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/... if you feel unwell.
P330	Rinse mouth.
P501	Dispose of contents/container to ... …in accordance with local/regional/national /international regulations (to be specified). Manufacturer/supplier or the competent authority to specify whether disposal requirements apply to contents, container or both.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P302+P352	IF ON SKIN: Wash with plenty of water/…
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P321	Specific treatment (see ... on this label).
P363	Wash contaminated clothing before reuse.
Supplemental Hazard Statement	none

- **Other hazards** none

---

3. Composition/information on ingredients

- Methyl Cyclopentenolone ⩾ 99.0%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

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- Form: Cryst powder
- Color: White to pale yellow
- Odor Nutty, maple-licorice aroma in dilute soln
- pH value at 10g/l H_2O N/A
- Boiling point: N/A
- Flash point: N/A
- Melting point: 104 – 108 ℃
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Solubility in water: I g in 72 ml water
- Organic solvents: Soluble, 1 g in 5 ml 90% alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

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- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not a dangerous goods
  IMDG: Not a dangerous goods
  IATA: Not a dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available

Chemical Safety Assessment

No data available

16. Other information

- Document Number: B-N27000-09
- Creation Date: Feb. 17, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL CYCLOPENTENOLONE HYDRATE NATURAL

1. *Identification*

- Chemical name: 3-Methylcyclopentane-1,2-Dione Monohydrate
- Synonyms: Methyl Cyclopentenolone, Monohydrate
- Molecular Formula: $C_6H_8O_2 \cdot H_2O$
- Molecular Weight: 130.15
- CAS No.: 80-71-7 / 765-70-8
- FEMA No.: 2700
- Einecs No.: 201-303-2 / 212-154-8
- FDA: 172.510
- CoE: 758
- REACH registration number: 01-2120779409-38-0000
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute Toxicity (Category 4)	H302
Eye Damage (Category 1)	H318
Skin Sensitive (Category 1)	H317

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Danger
Hazard statement(s)	
H318	Causes serious eye damage.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
Precautionary statement(s)	

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/…
P264	Wash ... thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/... if you feel unwell.
P330	Rinse mouth.
P501	Dispose of contents/container to ... …in accordance with local/regional/national /international regulations (to be specified). Manufacturer/supplier or the competent authority to specify whether disposal requirements apply to contents, container or both.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P302+P352	IF ON SKIN: Wash with plenty of water/…
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P321	Specific treatment (see ... on this label).
P363	Wash contaminated clothing before reuse.
Supplemental Hazard Statement	none

- **Other hazards** none

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3. Composition/information on ingredients

- Methyl Cyclopentenolone, Monohydrate

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4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**

Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

Form	Crystal powder
Color	White to beige
Odor	Nutty, maple-licorice aroma
pH value at 10g/l H_2O	N/A
Boiling point	178.7 °C at 1,013 hPa
Flash point	N/A
Melting point	70-78 °C
Explosive properties	N/A
Lower explosion limit	N/A
Upper explosion limit	N/A
Ignition temperature	N/A
Oxidizing properties	N/A
Vapor pressure	N/A
Specific gravity @25°C	N/A
Solubility in water	Soluble
Organic solvents	1 g in 5ml 90% alcohol

10. Stability and reactivity

Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
Substances to be avoided	Metals, strong oxidizing agents, strong bases.
Hazardous decomposition	Carbon dioxide, carbon monoxide.
Hazardous	Will not occur.

11. Toxicological information

Acute toxicity	No information available.
Sensitization	No information available.
Mutagenicity	No information available.
Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

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www.bestally.com.cn

- **UN number**

  ADR/RID:- IMDG:- IATA:
- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods
- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number B-N27001-09
- Creation Date Feb. 6, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CINNAMIC ACID NATURAL

1. *Identification*

- Chemical name 3-Phenyl-2-propenoic acid
- Synonyms Cinnamic Acid
- Molecular Formula $C_9H_8O_2$
- Molecular Weight 148.16
- CAS No. 140-10-3
- FEMA No. 2288
- Einecs No. 205-398-1
- FDA 172.510
- CoE 22

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Eye irritation (Category 2) H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H319 Causes serious eye irritation.

  Precautionary statement(s)

  P264 Wash ... thoroughly after handling.

  P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

  P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  P337+P313 If eye irritation persists: Get medical advice/attention.

  Supplemental Hazard Statements none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Cinnamic Acid ≥99%

Quality defines a brand, reputation builds an alliance.

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4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

  Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystalline
• Color	white
• Odor	Honey-floral
• PH value at 10g/l H_2O	N/A
• Boiling point	300 °C - lit.
• Flash point	100 °C - closed cup
• Melting point	130 - 135 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	N/A
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	no data available
• Substances to be avoided	Strong oxidizing agents,
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N22880-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

2-ACETYLPYRROLE

1. *Identification*

- Product name: 2-Acetylpyrrole
- Synonyms: Methyl 2-pyrrolyl ketone; 1-(1H-pyrrol-2-yl)ethan-1-one
- Molecular Formula: C_6H_7NO
- Molecular Weight: 109.13
- CAS No.: 1072-83-9
- FEMA No.: 3202
- Einecs No.: 214-016-2
- FDA: -
- CoE: 11721

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- 2-Acetylpyrrole ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Fine crystal
• Color:	White to pale brown
• Odor	Bready
• pH value at 10g/l H_2O	N/A
• Boiling point (ºC):	220 °C - lit.
• Flash point (ºC):	N/A
• Melting point (ºC):	88 - 92 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	N/A
• Solubility	Insoluble in prop glycol and water, 1 g in 6 ml ethanol

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN numbe**
  ADR/RID:- IMDG:- IATA:
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D32020-10
- Creation Date: Jun. 8, 21
- Revision: 10.0

- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

4,5-DIMETHYL-3-HYDROXY-2,5-DIHYDROFURAN-2-ONE

1. *Identification*

- Chemical name: 4,5-Dimethyl-3-hydroxy-2,5-dihydrofuran-2-one
- Synonyms: 2,3-Dimethyl-4-hydroxy-2,5-dihydrofuran-5-one; SUGAR LACTONE
- Molecular Formula: $C_6H_8O_3$
- Molecular Weight: 128.13
- CAS No.: 28664-35-9
- FEMA No.: 3634
- Einecs No.: 249-136-4
- FDA: Listed
- CoE: 11834

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** Stench

---

3. *Composition/information on ingredients*

- 4,5-Dimethyl-3-hydroxy-2,5-dihydrofuran-2-one ≥ 95%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 13.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Pale yellow to yellow
• Odor	Alcoholic Caramel
• pH value at 10g/l H_2O	N/A
• Boiling point (°C)	187
• Flash point (°C)	100
• Melting point (°C)	N/A
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25 °C:	1.170-1.195
• Solubility	Soluble in water; soluble in most organic solvents

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number B-D36340-10
- Creation Date Mar. 16, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

MALTOL NATURAL

1. *Identification*

- Chemical name: 3-Hydroxy-2-methyl-4-pyrone
- Synonyms: Maltol
- Molecular Formula: $C_6H_6O_3$
- Molecular Weight: 126.11
- CAS No.: 118-71-8
- FEMA No.: 2656
- Einecs No.: 204-271-8
- FDA: 172.510
- CoE: 148
- REACH Registration number: 01-2120766007-55-0001
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

  Signal word: Warning

  Hazard statement(s)

  H302: Harmful if swallowed.

  Precautionary statement(s)

  P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

  Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. Composition/information on ingredients

- Maltol ≥99.5%

---

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.
  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fireprotection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

• Form	Powder
• Color	White
• Odor	Caramel-like odor
• PH value at 10g/l H_2O	N/A
• Boiling point	284.7 °C at 1,013 hPa
• Flash point	110°C
• Melting point	160 - 164 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	N/A
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — Incompatible materials
- Substances to be avoided — Strong oxidizing agents
- Hazardous decomposition — Carbon monoxide, carbon dioxide
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1.410 mg/kg
  LD50 Oral - mouse - 550 mg/kg
  LD50 Oral - rabbit - 1.620 mg/kg
  LD50 Subcutaneous - mouse - 820 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG;- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number B-N26560-09
- Creation Date Jan. 21, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DECANOIC ACID NATURAL

1. *Identification*

- Chemical name: Decanoic Acid
- Synonyms: Capric acid
- Molecular Formula: $C_{10}H_{20}O_2$
- Molecular Weight: 172.26
- CAS No.: 334-48-5
- FEMA No.: 2364
- Einecs No.: 206-376-4
- FDA: 172.860
- CoE: 11

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Chronic aquatic toxicity (Category 3)	H412

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word Warning

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H412	Harmful to aquatic life with long lasting effects

Precautionary statement(s)

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. *Composition/information on ingredients*

- Decanoic Acid ≥98%

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4. *First aid measures*

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- **Eye contact:**
  -Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  -consult a physician if irritation persists
- **Skin contact:**
  -Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  -consult a physician if skin irritation persists
- **Inhalation:**
  -Remove from exposure and move to fresh air immediately.
  -Get medical aid.
- **Ingestion:**
  -If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.
  -Get medical aid. induce vomiting.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	-local exhaust ventilation necessary -take precautionary measures against electrostatic charging -processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	-Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	-In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	- Safety glasses
• Hand	- Protective gloves
• Skin	-Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystals
• Color	White
• Odor	Unpleasant odor
• PH value at 10g/l H_2O	N/A
• Boiling point	268 - 270 °C - lit.
• Flash point	110 °C - closed cup
• Melting point	27 - 32 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	20 hPa at 160 °C
• Specific gravity @25℃	0.893
• Solubility in water	N/A
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	Incompatible materials, dust generation, excess heat, strong oxidants
• Substances to be avoided	Bases, Reducing agents, Oxidizing agents
• Hazardous decomposition	Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide
• Hazardous	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - rat - > 10,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N23640-09
- Creation Date — Mar. 12, 20
- Revision — 9.0

- Disclaimer

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

2, 3, 5, 6-TETRAMETHYL PYRAZINE

1. *Identification*

- Chemical name: Tetramethylpyrazine
- Synonyms: Tetramethylpyrazine , Tetramethyl-1,4-Diazine
- Molecular Formula: $C_8H_{12}N_2$
- Molecular Weight: 136.20
- CAS No.: 1124-11-4
- FEMA No.: 3237
- Einecs No.: 214-391-2
- FDA: -
- CoE: 734

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word: Warning

  Hazard statement(s)

  H302: Harmful if swallowed.

  Precautionary statement(s)

  P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

  Supplemental Hazard Statements: none

- **Other hazards**: none

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3. *Composition/information on ingredients*

- 2,3,5,6-tetramethyl pyrazine ≥99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

- Technical measures — local exhaust ventilation necessary
  take precautionary measures against electrostatic charging
  processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).

• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Crystals or powder
• Color	White
• Odor	Fermented soybeans
• PH value at 10g/l H_2O	N/A
• Boiling point	190 °C - lit.
• Flash point	110°C
• Melting point	85-90°C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	N/A
• Solubility in water	Slightly soluble
• Organic solvents	Soluble

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. *Toxicological information*

• Acute toxicity	LD50 Oral - rat - 1,910 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-D32370-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

HELIOTROPIN NATURAL

1. *Identification*

- Chemical name 3,4-Methylenedioxybenzaldehyde
- Synonyms Piperonylaldehyde
- Molecular Formula $C_8H_6O_3$
- Molecular Weight 150.13
- CAS No. 120-57-0
- FEMA No. 2911
- Einecs No. 204-409-7
- FDA 182.60
- CoE 104

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin sensitisation (Category 1) H317

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H317 May cause an allergic skin reaction

  Precautionary statement(s)

  P280 Wear protective gloves.

  P302 + P352 IF ON SKIN: Wash with plenty of water.

  Supplemental Hazard statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Heliotropin ≥ 99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

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Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting:**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Keep in tightly closed container in a cool and dry place, protected from light and under Nitrogen

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystals
• Color	White
• Odor	Floral, heliotrope
• pH value at 10g/l H_2O	N/A
• Boiling point	264 °C - lit.
• Flash point	65.62 °C
• Melting point	35 - 42 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	N/A
• Organic solvents	1 g in 4 ml 70% alcohol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - 2,700 mg/kg LD50 Dermal - Rat - > 5,000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

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- Toxicity

Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 52 mg/l - 48 h
Toxicity to algae	ErC50 - Pseudokirchneriella subcapitata (green algae) - 31mg/l - 72 h NOEC - Pseudokirchneriella subcapitata (green algae) - 1.1mg/l - 72 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N29110-09
- Creation Date: Dec. 22, 20
- Revision: 9.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DISODIUM SUCCINATE NATURAL

1. *Identification*

- Product name: Disodium succinate
- Synonyms: Sodium succinate dibasic; Succinic acid disodium salt
- Molecular Formula: $C_4H_4Na_2O_4$
- Molecular Weight: 162.05
- CAS No.: 150-90-3
- FEMA No.: 3277
- Einecs No.: 205-778-7
- FDA: -
- CoE: 24

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** - none

---

3. *Composition/information on ingredients*

- Disodium succinate ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

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5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

- Form: Solid
- Color: White
- Odor Odorless
- pH value at 10g/l H_2O N/A
- Boiling point (°C): 426 °C
- Flash point (°C): 110 °C
- Melting point (°C): N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25 °C: N/A
- Solubility Soluble in water, insoluble in oils

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Will not occur.

11. Toxicological information

- Acute toxicity LD50 Intravenous - mouse - 4500 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

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- **UN number:**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- Hazard Class:
  ADR/RID:- IMDG:- IATA:-
- Packing Group:
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N32770-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

3, 5 -DIMETHYL-1, 2-CYCLOPENTADIONE

1. *Identification*

- Chemical name 3,5-Dimethyl-1,2-Cyclo-Pentanedione
- Synonyms -
- Molecular Formula $C_7H_{10}O_2$
- Molecular Weight 126.16
- CAS No. 13494-07-0
- FEMA No. 3269
- Einecs No. 236-811-3
- FDA -
- CoE 2235

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Acute toxicity, Oral (Category 4) H302

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H302 Harmful if swallowed.

  Precautionary statement(s)

  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 3,5-Dimethyl-1,2-cyclopentanedione ≥ 99%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Recommended storage temperature: 2 - 8 °C

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..

• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Powder
• Color	Light yellow to yellowish brown
• Odor	Maple, burnt sugar
• pH value at 10g/l H_2O	N/A
• Boiling point	N/A
• Flash point	N/A
• Melting point	87 - 93 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	N/A
• Solubility in water	Insoluble
• Organic solvents	N/A

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	No information available.
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number — B-D32690-10
- Creation Date — Jun. 8, 21
- Revision — 10.0
- Disclaimer — The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

L-METHIONINE NATURAL

1. *Identification*

- Product name: 2-Amino-4-(methylthio)butaoic acid
- Synonyms: DL-Methionine; 2-Amino-4-(methylthio)butanoic acid; DL-2-Amino-4-(methylthio)butyric acid; 2-Amino-g-(methylthio)butyric acid
- Molecular Formula: $C_5H_{11}NO_2S$
- Molecular Weight: 149.21
- CAS No.: 63-68-3
- FEMA No.: 3301
- Einecs No.: 200-562-9
- FDA: 172.320
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008

  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- l-Methionine ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated

clothing and shoes.

- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

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8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Crystals or crystalline powder
• Color:	White
• Odor	Characteristic aroma
• pH value at 10g/l H_2O	N/A
• Boiling point (°C):	186
• Flash point (°C):	N/A
• Melting point (°C):	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25 °C:	N/A
• Solubility	Soluble in water; Insoluble in ether

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N33010-07
- Creation Date: Nov. 11, 15
- Revision: 7.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

D,L-(3-AMINO-3-CARBOXYPROPYL)DIMETHYLSULFONIUM CHLORID

1. *Identification*

- Chemical name: S-Methylmethioninesulphonium chloride
- Synonyms: d,l-Methylmethionine sulfonium chloride; Vitamin U
- Molecular Formula: $C_6H_{14}ClNO_2S$
- Molecular Weight: 199.7
- CAS No.: 3493-12-7
- FEMA No.: 3445
- Einecs No.: 222-484-4
- FDA: -
- CoE: 761

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws
- **Other hazards** - none

---

3. *Composition/information on ingredients*

- Vitamin U ≥99%

---

4. *First aid measures*

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. hygroscopic Store under inert gas.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses

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- Hand — Protective gloves
- Skin — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form — Powder
- Color — White crystalline
- Odor — Characteristic cabbage taste and aroma
- PH value at 10g/l H_2O — N/A
- Boiling point — N/A
- Flash point — N/A
- Melting point — 132 -137 °C
- Explosive properties — N/A
- Lower explosion limit — N/A
- Upper explosion limit — N/A
- Ignition temperature — N/A
- Oxidizing properties — N/A
- Vapor pressure — N/A
- Specific gravity @25°C — N/A
- Solubility in water — Soluble
- Organic solvents — Insoluble

10. Stability and reactivity

- Chemical Stability — Stable under recommended storage conditions.
- Conditions to Avoid — Heat, flames and sparks.
- Substances to be avoided — Strong oxidizing agents, Acid chlorides, Acid anhydridesStrong oxidizing agents, Acid chlorides, Acid anhydrides
- Hazardous decomposition — Carbon monoxide, carbon dioxide,
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.（RTECS: NP9625000）

12. Ecological information

- No information available.

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-D34450-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

5-ETHYL-3-HYDROXY-4-METHYL-2(5H)-FURANONE

1. *Identification*

- Product name: 5-Ethyl-3-hydroxy-4-methyl-2(5H)-furanone
- Synonyms: Maple Furanone; Ethyl Fenugreek Lactone; Abhexone
- Molecular Formula: $C_7H_{10}O_3$
- Molecular Weight: 142.15
- CAS No.: 698-10-2
- FEMA No.: 3153
- Einecs No.: 211-811-6
- FDA: Listed
- CoE: 2300

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 5-Ethyl-3-hydroxy-4-methyl-2(5H)-furanone ≥ 96%

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4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C
  Handle and store under inert gas. Air and moisture sensitive.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses

- Hand — Protective gloves
- Skin: — Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: — Liquid
- Color: — Pale yellow to yellow
- Odor — Maple
- pH value at 10g/l H_2O — N/A
- Boiling point (°C): — 83 - 86 °C at 0.7 hPa - lit.
- Flash point (°C): — 113 °C - closed cup
- Melting point (°C): — 31 - 35 °C - lit.
- Explosive properties: — N/A
- Lower explosion limit: — N/A
- Upper explosion limit: — N/A
- Ignition temperature: — N/A
- Oxidizing properties: — N/A
- Vapor pressure: — N/A
- Specific gravity @25°C: — 1.134 - 1.144
- Solubility — Slightly soluble in water; 1 ml in 2 ml 95% ethanol

10. Stability and reactivity

- Chemical Stability: — Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid — Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: — Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: — Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: — Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

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- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:3335
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Aviation regulated solid, n.o.s.
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:9
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:III

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-D31530-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

DIHYDROCOUMARIN

1. *Identification*

• Chemical name	3,4-Dihydro-1-benzopyran-2-one
• Synonyms	Melilotic acid lactone; Meliloti; 1,2-Benzodihydropyrone
• Molecular Formula	$C_9H_8O_2$
• Molecular Weight	148.16
• CAS No.	119-84-6
• FEMA No.	2381
• Einecs No.	204-354-9
• FDA	-
• CoE	535

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram	
Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation
Precautionary statement(s)	
P261	Avoid breathing vapours.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

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3. Composition/information on ingredients

- Dihydrocoumarin ≥ 99%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Liquid
• Color	Colorless to slightly yellow
• Odor	Coconut
• pH value at 10g/l H_2O	N/A
• Boiling point	272 °C - lit.
• Flash point	113 °C - closed cup
• Melting point	22 - 25 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25°C	1.186 – 1.192
• Solubility in water	N/A
• Organic solvents	1 ml in 1 ml 95% ethanol

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - rat - 1,460 mg/kg
  LD50 Intraperitoneal - mouse - 200 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping Name**
  ADR/RID: Not dangerous goods
  IMSG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG: - IATA: -
- **Packing Group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-D23810-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

VINYL-4 GUAIACOL NATURAL

1. *Identification*

- Chemical name: 2-Methoxy-4-VinylPhenol
- Synonyms: p-Vinylcatechol-o-Methyl Ether; p-Vinylguaiacol
- Molecular Formula: $C_9H_{10}O_2$
- Molecular Weight: 150.18
- CAS No.: 7786-61-0
- FEMA No.: 2675
- Einecs No.: 232-101-2
- FDA: 172.510
- CoE: 177

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- 2-Methoxy-4-Vinylphenol ⩾ 98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
  Recommended storage temperature: 2 - 8 °C
  Handle and store under inert gas. Air and moisture sensitive.

8. Exposure controls and personal protection

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• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Oily liquid
• Color:	Colorless or pale straw
• Odor	Powerful, spicy, clove-like roasted peanut odor
• pH value at 10g/l H_2O	N/A
• Boiling point:	224 °C - lit.
• Flash point:	113 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	1.105 – 1.125
• Solubility in water:	Insoluble
• Organic solvents:	Soluble in ethanol

10. *Stability and reactivity*

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — No information available.
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number: B-N26750-10
- Creation Date: May. 25, 21
- Revision: 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

L-MENTHYL LACTATE NATURAL

1. *Identification*

- Chemical name: (1R,2S,5R)-2-Isopropyl-5-methylcyclohexyl
- Synonyms: -
- Molecular Formula: $C_{13}H_{24}O_3$
- Molecular Weight: 228.33
- CAS No.: 59259-38-0
- FEMA No.: 3748
- Einecs No.: 261-678-3
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

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3. *Composition/information on ingredients*

- L-Menthyl lactate ≥98%

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4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

  Get medical aid. Wash mouth out with water.

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5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

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9. Physical and chemical properties:

- Form: Solid
- Color: White
- Odor: Weak chamomile or tobacco odor
- PH value at 10g/l H_2O: N/A
- Boiling point: 142 °C at 7 hPa - lit.
- Flash point: 113°C - closed cup
- Melting point: 40 - 47 °C - lit.
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: N/A
- Solubility in water: N/A
- Organic solvents: N/A

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available
  No information available
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

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12. Ecological information

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- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N37480-10
- Creation Date: May. 27, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

VERATRALDEHYDE NATURAL

1. *Identification*

- Chemical name: 3,4-Dimethoxybenzaldehyde
- Synonyms: Methyl Vanillin; Veratryl Aldehyde
- Molecular Formula: $C_9H_{10}O_3$
- Molecular Weight: 166.18
- CAS No.: 120-14-9
- FEMA No.: 3109
- Einecs No.: 204-373-2
- FDA: 172.510
- CoE: 106

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation
Precautionary statement(s)	
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
Supplemental Hazard Statements	None

- **Other hazards** none

3. Composition/information on ingredients

- Veratraldehyde ≥ 99%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in COOL (5-10 ℃) DARK AREA.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form:	Flakes or solid
• Color:	White to tan or blue-gray
• Odor	Sweet vanilla
• pH value at 10g/l H_2O	N/A
• Boiling point:	281 °C - lit.
• Flash point:	113 °C - closed cup
• Melting point:	N/A
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Solubility in water:	N/A
• Organic solvents:	1 g in 1 ml 95% alcohol

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 2.000 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number:**
  ADR/RID:- IMDG:- IATA:-
- **Un proper shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA Not dangerous goods

- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number: B-N31090-10
- Creation Date: May. 25, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BENZOIC ACID

1. *Identification*

- Chemical name: Benzoic Acid
- Synonyms: Benzenecarboxylic acid; Carboxybenzene; Dracylic acid; Phenyl formic acid
- Molecular Formula: $C_7H_6O_2$
- Molecular Weight: 122.12
- CAS No.: 65-85-0
- FEMA No.: 2131
- EINECS No.: 200-618-2
- FDA: 184.1021
- CoE: 21

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Serious eye damage (Category 1)	H318
Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Lungs	H372

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word	Danger
Hazard statement(s)	
H315	Causes skin irritation.
H318	Causes serious eye damage.
H372	Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.
Precautionary statement(s)	
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear eye protection/ face protection.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
Supplemental Hazard Statements	none

- **Other hazards** none

3. Composition/information on ingredients

- Benzoic Acid ≥99.5%

4. First aid measures

- **Eye contact:**
  Rinse immediately with tap water for 10 minutes open eyelids forcibly;
  consult a physician if irritation persists
- **Skin contact:**
  Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;
  consult a physician if skin irritation persists
- **Inhalation:**
  Remove from exposure and move to fresh air immediately.

  Get medical aid.
- **Ingestion:**
  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. Exposure controls and personal protection

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	crystals, scales, or needles.
• Color	white
• Odor	faint urine, almond odour
• PH value at 10g/l H_2O	2.5 - 3.5 at 20 °C
• Boiling point	249 °C - lit.
• Flash point	121 °C - closed cup
• Melting point	121 - 125 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	572°C
• Oxidizing properties	N/A
• Vapor pressure	13 hPa at 132 °C
• Specific gravity @25°C	N/A
• Solubility in water	Slightly soluble.
• Organic solvents	Soluble

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10. Stability and reactivity

• Chemical Stability	Stable under normal temperatures and pressures. Volatile in

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steam.

- Conditions to Avoid — Dust generation, excess heat.
- Substances to be avoided — Strong oxidizing agents, strong bases, amines, ammonia, isocyanates
- Hazardous decomposition — Carbon monoxide, carbon dioxide.
- Hazardous — Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - Rat - female - 2,360 mg/kg
  LC50 Inhalation - Rat - 4 h - > 12.2 mg/l
  LD50 Dermal - Rabbit - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Lepomis macrochirus - 44.6 mg/l - 96 h
Toxicity to daphnia and other aquatic Immobilization invertebrates	EC50 - Daphnia magna (Water flea) - 860 mg/l - 48 h
Toxicity to algae static test	EC50 - Pseudokirchneriella subcapitata - > 33.1 mg/l - 72 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number: B-D21310-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

INDOLE NATURAL

1. *Identification*

- Chemical name: Indole
- Synonyms: 1-Benzazole; 1-Benzo(b)pyrrole; 2,3-Benzopyrrole; Benzopyrrole
- Molecular Formula: C_8H_7N
- Molecular Weight: 117.15
- CAS No.: 120-72-9
- FEMA No.: 2593
- Einecs No.: 204-420-7
- FDA: 172.510
- CoE: 560

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2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4)	H302
Acute toxicity, Dermal (Category 3)	H311
Skin irritation (Category 2)	H315
Serious eye damage (Category 1)	H318
Specific target organ toxicity - single exposure (Category 3)	H335
Acute aquatic toxicity (Category 1)	H400

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word	Danger
Hazard statement(s)	
H302	Harmful if swallowed.
H311	Toxic in contact with skin
H315	Causes skin irritation.

H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life
Precautionary statement(s)	
P261	Avoid breathing dust.
P273	Avoid release to the environment
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
Supplemental Hazard Statements	none

- **Other hazards** Stench.

---

3. *Composition/information on ingredients*

- Indole ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Air and light sensitive.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Flaky, crystal solid
• Color	White to pale yellow, lustrous,
• Odor	Unpleasant odor in high conc., free of fecal quality; floral on dilution
• pH value at 10g/l H_2O	N/A
• Boiling point	253 - 254 °C - lit.
• Flash point	121 °C - closed cup
• Melting point	50- 55 °C - lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	N/A
• Organic solvents	1 g in 3 ml 70% ethanol

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined paces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

---

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 1.000 mg/kg LD50 Dermal - rabbit - 790 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

---

12. Ecological information

- Toxicity

Toxicity to daphnia and LC50 - Daphnia magna (Water flea) - 1 mg/l - 48 h

other aquatic invertebrates	
Toxicity to algae	EC100 - Scenedesmus acuminatus - > 10 mg/l - 96 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:2811 IMDG:2811 IATA:2811
- **Shipping Name**
  ADR/RID: TOXIC SOLID, ORGANIC, N.O.S. (Indole)
  IMDG: TOXIC SOLID, ORGANIC, N.O.S. (Indole)
  IATA: TOXIC SOLID, ORGANIC, N.O.S. (Indole)
- **Hazard Class**
  ADR/RID:6.1 IMDG:6.1 IATA:6.1
- **Packing Group**
  ADR/RID:III IMDG:III IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N25930-10
- Creation Date: Mar. 25, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL ANTHRANILATE NATURAL

1. *Identification*

• Product name	Methyl 2-Aminobenzoate
• Synonyms	Methyl Anthranilate; o-Amino methyl benzoate; Methyl o-aminobenzoate
• Molecular Formula	$C_8H_9O_2N$
• Molecular Weight	151.16
• CAS No.	134-20-3
• FEMA No.	2682
• Einecs No.	205-132-4
• FDA	182.60
• CoE	250

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xi	Irritant	R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 15.

- **Label elements**

Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.

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H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Methyl anthranilate ≥ 98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. *Physical and chemical properties:*

• Form	Liquid
• Color	Colorless to pale yellow with blue fluorescence
• Odor	Grape
• pH value at 10g/l H_2O	N/A
• Boiling point (^oC)	256
• Flash point (^oC)	123 - closed cup

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• Melting point (°C)	23.8
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Specific gravity @25℃	1.161 - 1.169
• Solubility	1 mL in 5 mL 60% alcohol remains in soln to 10mL

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - rat - 2.910 mg/kg Remarks: Behavioral:Somnolence (general depressed activity). Behavioral:Coma. LD50 Dermal - rabbit - > 5.000 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal

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Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-

- **Shipping Name**

  ADR/RID: Not dangerous goods

  IMDG: Not dangerous goods

  IATA: Not dangerous goods

- **Hazard Class**

  ADR/RID:- IMDG:- IATA:-

- **Packing Group**

  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  For this product a chemical safety assessment was not carried out

  Full text of R-phrases referred to under sections 2

Xi	Irritant
R36/37/38	Irritating to eyes, respiratory system and skin.

---

16. Other information

- Document Number B- N26820-04
- Creation Date Oct. 13, 15
- Revision 4.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

CINNAMIC ALCOHOL NATURAL

1. *Identification*

- Chemical name: Cinnamyl alcohol
- Synonyms: gamma-Phenylallyl alcohol; Zimtalcohol
- Molecular Formula: $C_9H_{10}O$
- Molecular Weight: 134.18
- CAS No.: 104-54-1
- FEMA No.: 2294
- Einecs No.: 203-212-3
- FDA: 172.510
- CoE: 65

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin sensitization (Category 1) H317

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram 

  Signal word Warning

  Hazard statement(s)

  H317 May cause an allergic skin reaction.

  Precautionary statement(s)

  P280 Wear protective gloves.

  Supplemental Hazard Statements none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Cinnamic Alcohol ≥98%

---

4. *First aid measures*

- **Eye contact:**

  Rinse immediately with tap water for 10 minutes open eyelids forcibly; consult a physician if irritation persists

- **Skin contact:**

Remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents;

consult a physician if skin irritation persists

- **Inhalation:**

  Remove from exposure and move to fresh air immediately.

  Get medical aid.

- **Ingestion:**

  If conscious and alert, rinse mouth and-drink 2-4 cupfuls of milk or water.

  Get medical aid. induce vomiting.

---

5. *Fire-fighting measures*

- **General Information:**

  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

- **Extinguishing Media:**

  Use water spray, dry chemical, carbon dioxide, or chemical foam.

- **Special method of fire-fighting**

  Cool endangered containers with water spray; Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**

  Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:**

  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**

  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

  Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection..

- **Storage:**

  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

---

8. *Exposure controls and personal protection*

• Technical measures	local exhaust ventilation necessary take precautionary measures against electrostatic charging processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Cryst solid
• Color	White to slightly yellow
• Odor	Balsamic
• PH value at 10g/l H_2O	N/A
• Boiling point	250 °C at 1,013 hPa
• Flash point	126 °C - closed cup
• Melting point	30 - 35 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	< 0,01 hPa at 25 °C
• Specific gravity @25°C	N/A
• Solubility in water	Insoluble
• Organic solvents	Soluble

10. Stability and reactivity

• Chemical Stability	Stable under recommended storage conditions.
• Conditions to Avoid	no data available
• Substances to be avoided	Strong oxidizing agents
• Hazardous decomposition	Carbon monoxide, carbon dioxide,
• Hazardous	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - 2,500 mg/kg LD50 Dermal - rabbit - > 5,000 mg/kg

- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods.
  IMDG: Not dangerous goods.
  IATA: Not dangerous goods.
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  no data available

16. Other information

- Document Number — B-N22940-10
- Creation Date — May. 27, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

L-CYSTEINE HYDROCHLORIDE, MONOHYDRATE NATURAL

1. *Identification*

- Product name: L-cysteine hydrochloride, Monohydrate
- Synonyms: 2-Amino-3-Mercaptopropionic Acid；L-Beta-Mercaptoalanine
- Molecular Formula: $C_3H_7NO_2S \cdot HCl \cdot H_2O$
- Molecular Weight: 175.63
- CAS No.: 7048-04-6
- FEMA No.: 3263
- Einecs No.: 200-157-7
- FDA: -
- CoE: -

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008

  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

---

3. *Composition/information on ingredients*

- l-cysteine hydrochloride,Monohydrate ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**

Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Crystals powder
• Color:	White
• Odor	Sulferous aroma
• pH value at 10g/l H_2O	N/A
• Boiling point (°C):	N/A
• Flash point (°C):	N/A
• Melting point (°C):	176 °C
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25 °C:	N/A
• Solubility	Very soluble in water, ethanol and acetic acid; Insoluble in ether, acetone and benzene

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.

- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity: No information available.
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available.

---

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N32631-10
- Creation Date: Nov. 11, 15
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

PHENYLACETIC ACID NATURAL

1. *Identification*

- Chemical name: Phenylacetic Acid
- Synonyms: Benzylcarboxylic Acid; Alpha-Toluic Acid
- Molecular Formula: $C_8H_8O_2$
- Molecular Weight: 136.15
- CAS No.: 103-82-2
- FEMA No.: 2878
- Einecs No.: 203-148-6
- FDA: 172.510
- CoE: 672

---

2. *Hazards identification*

- **Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Phenylacetaldehyde ≥98%

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
  Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

Air sensitive. Store under inert gas.

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form	Crystal
• Color	Glistening white
• Odor	Persistent, disagreeable, suggestive of geranium leaf and rose when diluted
• PH value at 10g/l H_2O	N/A
• Boiling point	265 °C - lit.
• Flash point	132 °C
• Melting point	76-78°C lit.
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 97 °C
• Specific gravity @25°C	N/A
• Solubility in water	Slighty soluble in water
• Organic solvents	N/A

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.

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• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. Toxicological information

• Acute toxicity	LD50 Oral - Rat - 2,250 mg/kg Inhalation: No data available LD50 Dermal - Rabbit - > 5,000 mg/kg LD50 Intraperitoneal - Rat - 1,600 mg/kg LD50 Intraperitoneal - Mouse - 2,270 mg/kg LD50 Subcutaneous - Mouse - 1,500 mg/kg
• Sensitization	No information available.
• Mutagenicity	No information available.
• Other Studies	See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - other fish - 1,273 mg/l - 96 h

13. Disposal considerations

• Waste from residues	Observe local/national regulations regarding waste disposal Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

ADR/RID:- IMDG:- IATA:3335

- **Shipping Name**

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Aviation regulated solid, n.o.s. (Phenylacetic acid)

- **Hazard Class**

ADR/RID:- IMDG:- IATA:9

- **Packing Group**

  ADR/RID:- IMDG:- IATA:III

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available

- **Chemical Safety Assessment**

  no data available

16. Other information

- Document Number B-N28780-09
- Creation Date Dec. 22, 20
- Revision 9.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

METHYL CINNAMATE NATURAL, POWDER

1. *Identification*

- Chemical name: Methyl cinnamate
- Synonyms: -
- Molecular Formula: $C_{10}H_{10}O_2$
- Molecular Weight: 162.19
- CAS No.: 103-26-4
- FEMA No.: 2698
- Einecs No.: 203-093-8
- FDA: 172.510
- CoE: 333

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Skin Sensitive (Category 1B) H317

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

Signal word	Danger
Hazard statement(s)	
H317	May cause an allergic skin reaction
Precautionary statement(s)	
P280	Wear protective gloves/protective clothing/eye protection/face protection
Supplemental Hazard Statement	none

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Methyl Cinnamate ≥ 99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container, store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

9. *Physical and chemical properties:*

• Form	Cryst powder
• Color	White to slightly yellow
• Odor	Fruity, balsamic
• ppH value at 10g/l H_2O	N/A
• Boiling point	260 - 262°C - lit.
• Flash point	141 °C - closed cup
• Melting point	33 – 38 °C
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	N/A
• Solubility in water	Insoluble
• Organic solvents	1 g in 4 mL 80% alcohol

10. *Stability and reactivity*

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined spaces.
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

11. *Toxicological information*

- Acute toxicity — LD50 Oral - rat - 2.610 mg/kg
  LD50 Dermal - rabbit - > 5.000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

---

12. Ecological information

- No information available

---

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

---

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

---

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number — B-N26981-10
- Creation Date — May. 24, 21
- Revision — 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

ETHYL VANILLIN

1. *Identification*

- Chemical name: 3-Ethoxy-4-Hydroxybenzaldehyde
- Synonyms: Ethyl Vanillin
- Molecular Formula: $C_9H_{10}O_3$
- Molecular Weight: 166.17
- CAS No.: 121-32-4
- FEMA No.: 2464
- Einecs No.: 204-464-7
- FDA: 182.60
- CoE: 108

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Acute toxicity, Oral (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2)	H319
Specific target organ toxicity - single exposure (Category 3)	H335

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram 

Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard	none

Statements

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Ethyl vanillin ≥99%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.

- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Light sensitive.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form:	Crystals
• Color:	Fine White or slightly yellow, affected by strong light
• Odor	Strong, vanilla
• pH value at 10g/l H_2O	N/A
• Boiling point:	295 °C at 1,013 hPa
• Flash point:	145 °C - closed cup
• Melting point:	74 - 77 °C - lit.
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	< 0.01 hPa at 25 °C
• Solubility in water:	1g in 100 mL water at 50 °C
• Organic solvents:	1g in 5 mL 95% ethanol

---

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.

- Conditions to Avoid: Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity: LD50 Oral - rat - 1.590 mg/kg
  LD50 Dermal - rabbit - > 7.940 mg/kg
- Sensitization: No information available.
- Mutagenicity: No information available.
- Other Studies: See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

  Toxicity to fish: LC50 - Pimephales promelas (fathead minnow) - 87.6 mg/l - 96 h

13. Disposal considerations

- Waste from residues: Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**

  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**

  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**

  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**

  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  no data available
- **Chemical Safety Assessment**

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no data available

16. Other information

- Document Number: B-A24640-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

1-(P-METHOXYPHENYL)-1-PENTEN-3-ONE

1. *Identification*

- Chemical name: 1-(4-Methoxyphenyl)-1-penten-3-one
- Synonyms: Ethone; p-Methoxystyryl ethyl ketone
- Molecular Formula: C12H14O2
- Molecular Weight: 190.24
- CAS No.: 104-27-8
- FEMA No.: 2673
- Einecs No.: 203-190-5
- FDA: 172.515
- CoE: 164

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

---

3. *Composition/information on ingredients*

- Ethone ≥98%

---

4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

  Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

  NITROGEN PROTECTION! PURGE HEADSPACE WITH NITROGEN AFTER EACH OPENING. Keep in tightly closed container and store in **COOL** (5-10℃) DARK AREA.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

- Eyes: Safety glasses
- Hand Protective gloves
- Skin: Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

- Form: Soild
- Color: White to pale yellow
- Odor Nutty, maple
- PH value at 10g/l H_2O N/A
- Boiling point: 333.2°C
- Flash point: 151.5°C- closed cup
- Melting point: N/A
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @25°C: N/A
- Solubility in water: N/A
- Organic solvents: 1 g in 7 ml 95% alcohol

---

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

---

11. Toxicological information

- Acute toxicity No information available
  No information available
- Sensitization No information available.
- Mutagenicity No information available.

- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-D26730-07
- Creation Date: May. 27, 21
- Revision: 7.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

BESTVANIL™

VANILLIN NATURAL EX FERULIC ACID

1. *Identification*

- Chemical name: 4-Hydroxy-3-Methoxy Benzaldehyde
- Synonyms: Methylprotocatechuic Aldehyde; Vanillaldehyde; Vanillic
- Molecular Formula: $C_8H_8O_3$
- Molecular Weight: 152.15
- CAS No.: 121-33-5
- FEMA No.: 3107
- Einecs No.: 204-465-2
- FDA: -
- CoE: 107
- REACH registration number: 01-2119516040-60-0004
- Only representtive: Chemical Inspection &Regulation service Limited
- Address: Room 002, Regus Harcourt Centre D02 HW77, Dublin, Ireland
- Contact Person(E-mail): info@cirs-reach.com
- Telephone: +00 353 1 477 3708
- Contact Person: Cyndy

---

2. *Hazards identification*

- **Classification of the substance or mixture**

  Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

  Eye irritation (Category 2) H319

- **Label elements**

  Labelling according Regulation (EC) No 1272/2008 [CLP]

  Pictogram

  

  Signal word: Warning

  Hazard statement(s)

  H319: Causes serious eye irritation.

  Precautionary statement(s)

  P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  Supplemental Hazard Statements: none

- **Other hazards**: none

---

3. Composition/information on ingredients

- Vanillin Ex Ferulic Acid ≥ 99.5%

---

4. First aid measures

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray; Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:**
  Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
  Moisture sensitive.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes	Safety glasses
• Hand	Protective gloves
• Skin	Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

• Form	Crystal, usually needles
• Color	Fine, white to slightly yellow
• Odor	Odor and taste of vanilla
• pH value at 10g/l H_2O	N/A
• Boiling point	170 °C at 20 hPa – lit.
• Flash point	N/A
• Melting point	81~83 ℃
• Explosive properties	N/A
• Lower explosion limit	N/A
• Upper explosion limit	N/A
• Ignition temperature	N/A
• Oxidizing properties	N/A
• Vapor pressure	1 hPa at 107 °C < 0.01 hPa at 25 °C 0.0022 hPa at 25 °C
• Solubility in water	1 g soluble in 100 ml water
• Organic solvents	Soluble in alcohol

---

10. Stability and reactivity

• Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Ignition sources, excess heat, freezing temperatures, confined
• Substances to be avoided	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition	Carbon dioxide, carbon monoxide.
• Hazardous	Will not occur.

11. Toxicological information

- Acute toxicity — LD50 Oral - Rat - male and female - 3,978 mg/kg
  LD50 Dermal - Rat - male and female - > 2,000 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

12. Ecological information

- Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 57 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 36.6 mg/l - 48 h
Toxicity to algae	ErC50 - Pseudokirchneriella subcapitata (green algae) - 120 mg/l - 72 h (OECD Test Guideline 201) NOEC - Pseudokirchneriella subcapitata (green algae) - 47 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	IC50 - microorganisms - 163 mg/l - 40 h

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available

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- **Chemical Safety Assessment**
  no data available

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16. Other information

- Document Number B-N31071-10
- Creation Date Jan. 19, 21
- Revision 10.0
- Disclaimer The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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MATERIAL SAFETY DATA SHEET

BENZYL CINNAMATE NATURAL

1. *Identification*

- Chemical name: Benzyl cinnamate
- Synonyms: Cinnamic acid benzyl ester; Benzyl beta-phenylacrylate
- Molecular Formula: $C_{16}H_{14}O_2$
- Molecular Weight: 238.29
- CAS No.: 103-41-3
- FEMA No.: 2142
- Einecs No.: 203-109-3
- FDA: 172.510
- CoE: 331

---

2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** – none

---

3. *Composition/information on ingredients*

- Benzyl Cinnamate Natural ≥98%

---

4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.

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- **After ingestion:**
  Get medical aid. Wash mouth out with water.

---

5. Fire-fighting measures

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

---

6. Accidental release measures

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

---

7. Handling and storage

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container, store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. Exposure controls and personal protection

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter

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- Eyes: Safety glasses
- Hand Protective gloves
- Skin: Wear appropriate protective clothing to prevent skin exposure

---

9. Physical and chemical properties:

- Form: Solid
- Color: White to pale yellow
- Odor Sweet, balsamic
- PH value at 10g/l H_2O N/A
- Boiling point: 195 - 200 °C at 7 hPa - lit.
- Flash point: 180°C - closed cup
- Melting point: 34 - 37 °C - lit.
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Specific gravity @20°C: N/A
- Solubility in water: N/A
- Organic solvents: Soluble

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10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

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11. Toxicological information

- Acute toxicity LD50 Oral - rat - 5.530 mg/kg
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

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12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. TRANSPORT INFORMATION

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N21420-10
- Creation Date: May. 27, 21
- Revision: 10.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

ANISIC ACID NATURAL

1. *Identification*

- Chemical name: 4-Methoxybenzoic Acid
- Synonyms: p-Anisic Acid; Anisic Acid; Draconic Acid; p-Methoxybenzoic Acid; 4-Methoxybenzoic Acid
- Molecular Formula: $C_8H_8O_3$
- Molecular Weight: 152.15
- CAS No.: 100-09-4
- FEMA No.: 3945
- Einecs No.: 202-818-5
- FDA: -
- CoE: 10077

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2. *Hazards identification*

- **Classification of the substance or mixture**
  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
  This substance is not classified as dangerous according to Directive 67/548/EEC.
- **Label elements**
  The product does not need to be labelled in accordance with EC directives or respective national laws.
- **Other hazards** none

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3. *Composition/information on ingredients*

- Anisic Acid ≥99%

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4. *First aid measures*

- **Eye contact:**
  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin contact:**
  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

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- **Inhalation:**
  Remove from exposure and move to fresh air immediately. Get medical aid.
- **After ingestion:**
  Get medical aid. Wash mouth out with water.

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5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

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6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

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7. *Handling and storage*

- **Handling:**
  Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
  Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

---

8. *Exposure controls and personal protection*

- Technical measures — Local exhaust ventilation necessary
  Take precautionary measures against electrostatic charging
  Processing in closed systems, if possible superposed by inert gas

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(e.g. nitrogen).

• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves
• Skin:	Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

• Form:	Crystals
• Color:	White
• Odor	Practically no odour
• pH value at 10g/l H_2O	N/A
• Boiling point:	275 - 280 °C at 1,013 hPa
• Flash point:	185 °C - closed cup
• Melting point:	182 - 185 °C
• Explosive properties:	N/A
• Lower explosion limit:	N/A
• Upper explosion limit:	N/A
• Ignition temperature:	N/A
• Oxidizing properties:	N/A
• Vapor pressure:	N/A
• Specific gravity @25°C:	N/A
• Solubility in water:	Soluble
• Organic solvents:	Souble

10. Stability and reactivity

• Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
• Conditions to Avoid	Heat, flames and sparks.
• Substances to be avoided:	Metals, strong oxidizing agents, strong bases.
• Hazardous decomposition:	Carbon dioxide, carbon monoxide.
• Hazardous Polymerization:	Will not occur.

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11. Toxicological information

- Acute toxicity — LD50 Oral - mouse - 400 mg/kg
- Sensitization — No information available.
- Mutagenicity — No information available.
- Other Studies — See actual entry in RTECS for complete information.

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12. Ecological information

- Toxicity to fish — no data available

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13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

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14. Transport information

- **UN number**
  ADR/RID: - IMDG: - IATA: -
- **UN proper shipping name**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Transport hazard class(es)**
  ADR/RID: - IMDG: - IATA: -
- **Packaging group**
  ADR/RID: - IMDG: - IATA: -

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15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

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16. Other information

- Document Number: B-N39450-09
- Creation Date: May. 27, 21
- Revision: 9.0

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- Disclaimer

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MATERIAL SAFETY DATA SHEET

L-RHAMNOSE MONOHYDRATE NATURAL

1. *Identification*

- Chemical name: (*2R,3R,4S,5S*)-2,3,4,5-Tetrahydroxyhexanal
- Synonyms: 6-Deoxyhexopyranose; 6-Deoxy-l-Mannos; 6-Deoxymannose
- Molecular Formula: $C_6H_{12}O_5 \bullet H_2O$
- Molecular Weight: 182.17
- CAS No.: 3615-41-6
- FEMA No.: 3730
- Einecs No.: 222-793-4
- FDA: -
- CoE: -

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2. *Hazards identification*

- **Classification of the substance or mixture**

  Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

  This substance is not classified as dangerous according to Directive 67/548/EEC.

- **Label elements**

  The product does not need to be labelled in accordance with EC directives or respective national laws.

- **Other hazards** none

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3. *Composition/information on ingredients*

- L-Rhamnose ≥ 99%

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4. *First aid measures*

- **Eye contact:**

  Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

- **Skin contact:**

  Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- **Inhalation:**

  Remove from exposure and move to fresh air immediately. Get medical aid.

- **After ingestion:**

Get medical aid. Wash mouth out with water.

5. *Fire-fighting measures*

- **General Information:**
  As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
- **Extinguishing Media:**
  Use water spray, dry chemical, carbon dioxide, or chemical foam.
- **Special method of fire-fighting**
  Cool endangered containers with water spray ;Containers may explode when heated.

6. *Accidental release measures*

- **General Information:**
  Use proper personal protective equipment as indicated in Section 8.
- **Spills/Leaks:**
  Vacuum or sweep up material and place into a suitable disposal container.

7. *Handling and storage*

- **Handling:**
  Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
- **Storage:**
  Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. *Exposure controls and personal protection*

• Technical measures	Local exhaust ventilation necessary Take precautionary measures against electrostatic charging Processing in closed systems, if possible superposed by inert gas (e.g. nitrogen).
• Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower..
• Respiratory protection	In case of olfactory nuisance: respirator with independent air supply or mask with activated charcoal filter
• Eyes:	Safety glasses
• Hand	Protective gloves

- Skin: Wear appropriate protective clothing to prevent skin exposure

9. Physical and chemical properties:

- Form: Crystalline
- Color: White
- Odor Odorless
- pH value at 10g/l H_2O N/A
- Boiling point: 399°C
- Flash point: 209°C
- Melting point: 87-95°C
- Explosive properties: N/A
- Lower explosion limit: N/A
- Upper explosion limit: N/A
- Ignition temperature: N/A
- Oxidizing properties: N/A
- Vapor pressure: N/A
- Solubility in water: Soluble
- Organic solvents: N/A

10. Stability and reactivity

- Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
- Conditions to Avoid Ignition sources, excess heat, freezing temperatures, confined spaces.
- Substances to be avoided: Metals, strong oxidizing agents, strong bases.
- Hazardous decomposition: Carbon dioxide, carbon monoxide.
- Hazardous Polymerization: Will not occur.

11. Toxicological information

- Acute toxicity No information available.
- Sensitization No information available.
- Mutagenicity No information available.
- Other Studies See actual entry in RTECS for complete information.

12. Ecological information

- No information available

13. Disposal considerations

- Waste from residues — Observe local/national regulations regarding waste disposal
  Incinerate in qualified installation with flue gas scrubbing

14. Transport information

- **UN number**
  ADR/RID:- IMDG:- IATA:-
- **Shipping Name:**
  ADR/RID: Not dangerous goods
  IMDG: Not dangerous goods
  IATA: Not dangerous goods
- **Hazard Class:**
  ADR/RID:- IMDG:- IATA:-
- **Packing Group:**
  ADR/RID:- IMDG:- IATA:-

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  no data available
- **Chemical Safety Assessment**
  For this product a chemical safety assessment was not carried out

16. Other information

- Document Number: B-N37300-10
- Creation Date: May. 24, 21
- Revision: 10.0
- Disclaimer: The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.