SAFETY DATA SHEET

500666 DIMETHYL SULFIDE NATURAL

1. IDENTIFICATION

Product Description: DIMETHYL SULFIDE NATURAL
CAS # 75-18-3
FEMA Number 2746

Recommended use: Concentrated aromatic and flavor ingredient which may be used in flavor and fragrance compounds according to legal and IFRA or FEMA GRAS/FDA guidelines. Cosmetic material for FDA regulated product use.

Recommended restrictions: For Manufacturing Use Only

24 Hour Emergency Response Information
INFOTRAC (ACCT# 78928);
1-800-535-5053 WITHIN THE U.S.A.
1-352-323-3500 OUTSIDE THE U.S.A.

Web Site: www.vigon.com
For information call: 570-476-6300

Company
Vigon International, Inc.
127 Airport Road
E. Stroudsburg, PA 18301
For information call: 570-476-6300
Web Site: www.vigon.com

Manufacturer/Importer/Supplier/Distributor information
Manufacturer

3. PHYSICAL PROPERTIES

Flammable liquids

4. HAZARDS IDENTIFICATION

Acute toxicity, oral
Category 5
Serious eye damage/eye irritation
Category 2A

Hazardous to the aquatic environment, acute hazard
Category 3
Hazardous to the aquatic environment, long-term hazard
Category 3

5. LIQUID CHEMICAL REACTIVITY

6. STABILITY AND REACTIVITY

7. ECOTOXICITY

8. TRANSPORT INFORMATION

9. REGULATORY INFORMATION

10. TRANSPORT INFORMATION

11. SI/IE PROTECTIONS

12. SI/IE PROTECTIONS

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100. SI/IE PROTECTIONS
Signal word
Danger

Hazard statement
H225 Highly flammable liquid and vapor.
H303 May be harmful if swallowed.
H319 Causes serious eye irritation.
H402 Harmful to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement
Prevention
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.
P243 Take action to prevent static discharges.
P264 Wash thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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.
P312 Call a POISON CENTER/doctor if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P370 + P378 In case of fire: Use appropriate media to extinguish.

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

Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information
100% of the substance consists of component(s) of unknown acute inhalation toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMETHYL SULFIDE</td>
<td>methylsulfanylmethane</td>
<td>75-18-3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>dimethyl monosulfide</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-thiapropene</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>dimethyl thioether</td>
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<td></td>
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<tr>
<td></td>
<td>thiobismethane</td>
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</tbody>
</table>
4. FIRST-AID MEASURES

Inhalation
If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Get medical attention if irritation develops and persists. Wash skin thoroughly with soap and water for several minutes.

Eye contact
Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. Promptly wash eyes with plenty of water while lifting the eye lids.

Ingestion
Call a physician or poison control center immediately. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn’t enter the lungs.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Indication of immediate medical attention and special treatment needed
Not available.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water spray, fog, CO2, dry chemical, or alcohol resistant foam.

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical
Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage. Ventilate closed spaces before entering them. Keep run-off water out of sewers and water sources. Dike for water control.

Specific methods
Use water spray to cool unopened containers.

General fire hazards
Static charges generated by emptying package in or near flammable vapor may cause flash fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.

Methods and materials for containment and cleaning up
Never return spills in original containers for re-use.

Do not allow material to contaminate ground water system. Clean surface thoroughly to remove residual contamination.
Environmental precautions
Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. HANDLING AND STORAGE
Precautions for safe handling
Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Occupational exposure limits

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMETHYL SULFIDE (CAS 75-18-3)</td>
<td>TWA</td>
<td>10 ppm</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Use explosion-proof ventilation equipment to stay below exposure limits. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection
Hand protection
Chemical resistant gloves.

Other
Wear suitable protective clothing.

Respiratory protection
Respiratory protection not required. If ventilation is insufficient, suitable respiratory protection must be provided.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Refer to Spec Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Color</td>
<td>Refer to Spec Sheet</td>
</tr>
</tbody>
</table>
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500666 DIMETHYL SULFIDE NATURAL

Revision Date: 08-25-2020
Version # 03
Print Date: 08-25-2020

Odor Characteristic.
Odor threshold Not available.
pH Not available.
Melting point/freezing point -144.94 °F (-98.3 °C)
Initial boiling point and boiling range 100.4 °F (38 °C)
Flash point -34.0 °F (-36.7 °C) Closed Cup
Evaporation rate Not available.
Flammability (solid, gas) Not applicable.
Upper/lower flammability or explosive limits
   Flammability limit - lower ( %) Not available.
   Flammability limit - upper ( %) Not available.
   Explosive limit - lower (%) Not available.
   Explosive limit - upper (%) Not available.
Vapor pressure 647 mm Hg at 25 °C
Vapor density 2.14
Relative density Not available.
Solubility(ies)
   Solubility (water) Insoluble
Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature 403 °F (206.11 °C)
Decomposition temperature Not available.
Viscosity Not available.
Other information
   Density 0.85 g/cm3 estimated at 20 °C
   Explosive properties Not explosive.
   Flammability class Flammable IA estimated
   Molecular formula C2-H6-S
   Molecular weight 62.14 g/mol
   Oxidizing properties Not oxidizing.
   Specific gravity 0.85 at 25 °C
   Surface tension 26.5 mN/m (51.8 °F (11 °C))

10. STABILITY AND REACTIVITY
Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Material is stable under normal conditions.
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Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials

Hazardous decomposition products
No hazardous decomposition products if stored and handled as indicated.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Inhalation</th>
<th>Prolonged inhalation may be harmful.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>Knowledge about health hazard is incomplete.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>May be harmful if swallowed.</td>
</tr>
</tbody>
</table>

Symptoms related to the physical, chemical and toxicological characteristics
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity
May be harmful if swallowed.

Product | Species | Test Results
--- | --- | ---
DIMETHYL SULFIDE (CAS 75-18-3)

<table>
<thead>
<tr>
<th>Acute</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg Remarks: Lungs, Thorax, or Respiration:Other changes.</td>
</tr>
</tbody>
</table>

Inhalation

<table>
<thead>
<tr>
<th>LC50</th>
<th>Rat</th>
<th>40250 ppm</th>
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</thead>
</table>

Oral

<table>
<thead>
<tr>
<th>LD50</th>
<th>Rat</th>
<th>3300 mg/kg Remarks: Behavioral:General anesthetic. Behavioral:Change in motor activity (specific assay).</th>
</tr>
</thead>
</table>

Skin corrosion/irritation
Due to partial or complete lack of data the classification is not possible.

Serious eye damage/eye irritation
Causes serious eye irritation.

Respiratory or skin sensitization

<table>
<thead>
<tr>
<th>Respiratory sensitization</th>
<th>Due to partial or complete lack of data the classification is not possible.</th>
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<tbody>
<tr>
<td>Skin sensitization</td>
<td>Due to partial or complete lack of data the classification is not possible.</td>
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<tr>
<td>Germ cell mutagenicity</td>
<td>Due to partial or complete lack of data the classification is not possible.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Due to partial or complete lack of data the classification is not possible.</td>
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</table>

IARC Monographs. Overall Evaluation of Carcinogenicity
Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not listed.
US. National Toxicology Program (NTP) Report on Carcinogens
Not listed.

Reproductive toxicity
Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure
Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure
Due to partial or complete lack of data the classification is not possible.
Aspiration hazard
Due to partial or complete lack of data the classification is not possible.
Chronic effects
Prolonged inhalation may be harmful.

12. ECOLOGICAL INFORMATION

Ecotoxocity
Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
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</thead>
<tbody>
<tr>
<td>DIMETHYL SULFIDE (CAS 75-18-3)</td>
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<tr>
<td>Aquatic</td>
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<tr>
<td>Algae</td>
<td>EC50</td>
<td>Green algae (Desmodesmus</td>
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<td></td>
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<td>subspicatus)</td>
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<tr>
<td></td>
<td></td>
<td>&gt; 113.7 mg/l, 72 hours</td>
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<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
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<tr>
<td>Fish</td>
<td>LC50</td>
<td>Oncorhynchus mykiss</td>
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<td>213 mg/l, 96 hours</td>
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Persistence and degradability
No data is available on the degradability of this substance.

Bioaccumulative potential
No data available.

Mobility in soil
No data available.

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal instructions
Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Hazardous waste code
Not established.

Waste from residues / unused products
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
14. TRANSPORT INFORMATION

ADN
- UN number: 1164
- UN proper shipping name: DIMETHYL SULFIDE
- Transport hazard class(es): 3
- Subsidiary class(es): -
- Packing group: II
- Environmental hazards: No
- Labels required: 3

ADR
- UN number: 1164
- UN proper shipping name: DIMETHYL SULFIDE
- Transport hazard class(es): 3
- Subsidiary class(es): -
- Packing group: II
- Environmental hazards: No
- Labels required: 3

RID
- UN number: 1164
- UN proper shipping name: DIMETHYL SULFIDE
- Transport hazard class(es): 3
- Subsidiary class(es): -
- Packing Group: II
- Environmental Hazards: No
- Labels required: 3
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

DOT

BULK
- UN number: 1164
- Proper shipping name: DIMETHYL SULFIDE
- Hazard class: 3
- Packing group: II
- Environmental hazards:
  - Marine pollutant: No
- Labels required: 3

DOT

NON-BULK
- UN number: 1164
- Proper shipping name: DIMETHYL SULFIDE
- Hazard class: 3
- Packing group: II
- Environmental hazards:
  - Marine pollutant: No
- Labels required: 3
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IATA
UN number 1164
UN proper shipping name DIMETHYL SULFIDE
Transport hazard class(es) 3
Subsidiary class(es) -
Packing group II
Environmental hazards No
Labels required 3

IMDG
UN number 1164
UN proper shipping name DIMETHYL SULFIDE
Transport hazard class(es) 3
Subsidiary class(es) -
Packing group II
Environmental hazards Marine pollutant No
Labels required 3
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.

ADN; ADR; DOT BULK; DOT NON-BULK; IATA; IMDG; RID

15. REGULATORY INFORMATION
US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
DIMETHYL SULFIDE (CAS 75-18-3) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not listed.
Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.
SARA 311/312 Hazardous chemical
Yes
  Classified hazard categories
  Flammable (gases, aerosols, liquids, or solids)
  Serious eye damage or eye irritation
SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace
  DIMETHYL SULFIDE (CAS 75-18-3) High priority

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION
Issue date 11-29-2015
Revision date 08-25-2020
Version # 03
HMIS® ratings
  Health: 2
  Flammability: 4
  Physical hazard: 0
Vigon International, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, and disposal and should not be considered as a guarantee or quality specification. This product has not been evaluated for safe use in e-cigarettes or any vaping application where the product(s) is/are intentionally vaporized and inhaled. Vigon International, Inc. has performed no testing on these products in e-cig/vaping applications. It is the sole responsibility of the individual(s) purchasing this product to assess its’ safety in the final application. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal, and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufacturers, and technical groups and is considered to be accurate to the best of Vigon’s knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.

This document has undergone significant changes and should be reviewed in its entirety.