

Section 1: IDENTIFICATION

Product Name: Dimethyl Sulfide (DMS)
Synonyms: Dimethyl sulphide.
Product Use: See Technical Data Sheet.
Restrictions on Use: Not available.
Manufacturer/Supplier: Gaylord Chemical Company, LLC
1880 Fairlawn Rd
Tuscaloosa, AL 35401
United States
Emergency Phone: CHEMTREC (USA): (800) 424-9300
Customer Service: Gaylord Chemical Company, LLC:
(985) 649-5464 (8:00am - 5:00pm CST)
(205) 342-0652 (Nights and Weekends)
Date of Preparation of SDS: October 18, 2017

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification: Flammable Liquids, Category 2

LABEL ELEMENTS

Hazard

Pictogram(s):



Signal Word: Danger

Hazard Statements: Highly flammable liquid and vapor.

Precautionary Statements

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical, ventilating, and lighting equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Wear protective gloves, protective clothing and eye protection.

Response: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
In case of fire: Use dry chemical, CO₂, water spray or regular foam to extinguish.

Storage: Store in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

SAFETY DATA SHEET

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

| Hazardous Ingredient(s) | Common name / Synonyms | CAS No. | % wt./wt. |
|--------------------------------|-------------------------------|----------------|------------------|
| Methane, 1,1'-thiobis- | Dimethyl sulfide; DMS | 75-18-3 | 100 |

Impurities / Stabilizing additives: None known.

Section 4: FIRST-AID MEASURES

Inhalation: If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Vapor inhalation may cause moderate eye, nose, and throat irritation, making it unlikely that individuals will tolerate moderate to high concentrations. Headache and decreased ability to concentrate may occur.

Eye Contact: If in eyes: Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Acute and delayed symptoms and effects: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Call a poison center or doctor if you feel unwell. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Highly flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: Take action to prevent static discharges. This material is sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO₂, water spray or regular foam.
Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Do not use straight streams. CAUTION: This product has a very low flash point: Use of water spray when fighting fire may be inefficient.

Products of Combustion: Oxides of carbon. Oxides of sulphur.

Protection of Firefighters: Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded.

- Personal Precautions:** Do not touch or walk through spilled material. Use personal protection recommended in Section 8.
- Environmental Precautions:** Prevent entry into waterways, sewers, basements or confined areas.
- Methods for Containment:** Stop leak if you can do it without risk. A vapor suppressing foam may be used to reduce vapors.
- Methods for Clean-Up:** Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.
- Other Information:** See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:

Do not swallow. Avoid breathing mist, vapours, or spray. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use non-sparking tools. Take action to prevent static discharges. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. See Section 8 for information on Personal Protective Equipment.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Guidelines
Component**

Dimethyl sulfide (DMS) [CAS No. 75-18-3]

ACGIH: 10 ppm (TWA); (2001)

OSHA: No PEL established.

PEL: Permissible Exposure Limit

TWA: Time-Weighted Average

- Engineering Controls:** Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof electrical, ventilating, and lighting equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



- Eye/Face Protection:** Wear chemical safety goggles. Ensure that eyewash stations are close to the workstation location. Use equipment for eye protection that meets the standards referenced by

CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

- Hand Protection:** Wear protective gloves. Butyl or nitrile rubber gloves are recommended. Consult manufacturer specifications for further information.
- Skin and Body Protection:** Wear protective clothing. Flame resistant clothing that meets the NFPA 2112 and CAN/CGSB 155.20 standards is recommended in areas where material is stored or handled.
- Respiratory Protection:** If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapor cartridge, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
- General Hygiene Considerations:** Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--|
| Appearance: | Clear, colorless liquid. |
| Colour: | Colorless. |
| Odour: | Stench. |
| Odour Threshold: | 2.5 ppm |
| Physical State: | Liquid. |
| pH: | Not available. |
| Melting Point / Freezing Point: | -98 °C (-144.4 °F) |
| Initial Boiling Point: | 37.3 °C (99.1 °F) |
| Boiling Range: | Not available. |
| Flash Point: | -49 °C (-56.2 °F) |
| Evaporation Rate: | Not available. |
| Flammability (solid, gas): | Not applicable. |
| Lower Flammability Limit: | 2.2 % |
| Upper Flammability Limit: | 19.7 % |
| Vapor Pressure: | 53.2 kPa at 20 °C (68 °F) 103.4 kPa at 38 °C (100 °F) |

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Vapor Density: 2.1 (Air = 1)
Relative Density: 0.85 (Water = 1)
Solubilities: Insoluble in water.
Partition Coefficient: n-Octanol/Water: log Pow: 0.84
Auto-ignition Temperature: 205 °C (401 °F)
Decomposition Temperature: Not available.
Viscosity: Not available.
Percent Volatile, wt. %: Not available.
VOC content, wt. %: Not available.
Density: Not available.
Coefficient of Water/Oil Distribution: Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability: Stable under normal storage conditions.
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials: Oxidizers.
Hazardous Decomposition Products: Not available.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: 3300 mg/kg (rat)
Dermal: > 5000 mg/kg (rabbit)
Inhalation: 40250 mg/m³ (rat); 4H

Component Toxicity

| Component | CAS No. | LD ₅₀ oral | LD ₅₀ dermal | LC ₅₀ |
|------------------|---------|-----------------------|-------------------------|-----------------------------------|
| Dimethyl sulfide | 75-18-3 | 3300 mg/kg (rat) | > 5000 mg/kg (rabbit) | 40250 mg/m ³ (rat); 4H |

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system.

Symptoms (including delayed and immediate effects)

- Inhalation:** May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Vapor inhalation may cause moderate eye, nose, and throat irritation, making it unlikely that individuals will tolerate moderate to high concentrations. Headache and decreased ability to concentrate may occur.
- Eye:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
- Skin:** May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.
- Ingestion:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Not available.

Aggravated By Exposure:

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

- Target Organs:** Skin. Eyes. Gastrointestinal tract. Respiratory system.
- Chronic Effects:** Prolonged or repeated contact may dry skin and cause irritation.
- Carcinogenicity:** This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.
- Mutagenicity:** Dimethyl sulfide was not mutagenic to *Salmonella typhimurium* or *Escherichia coli* (bacterial reverse mutation assay) in vitro, with or without metabolic activation. It was also negative in a DNA damage and repair assay using *Salmonella typhimurium*. Dimethyl sulfide was not mutagenic in an in vivo mouse micronucleus study.
- Reproductive Effects:** Dimethyl sulfide had no effect on male or female reproductive organs following repeated oral dosing in rats for up to 14 weeks. When pregnant rats were dosed with dimethyl sulfide from gestation days 6 to 19 via gavage at doses as high as 1000 mg/kg bw/day, no maternal toxicity, embryo-fetal or developmental toxicity or teratogenicity was observed.
- Developmental Effects**
- Teratogenicity:** Not available.
- Embryotoxicity:** Not available.
- Toxicologically Synergistic Materials:** Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: *Oncorhynchus mykiss* (Rainbow trout): LC50 = 213 mg/L, 96-hr;
Daphnia magna: EC50 = 29 mg/L, 48-hr;
Daphnia magna: EC50 = 81 mg/L, 48-hr;
Pseudokirchneriella subcapitata: EC50 = 23 to > 113.7 mg/L, 96-hr.

Persistence / Degradability: Dimethyl sulfide is photodegraded by reaction with hydroxyl radicals in the atmosphere with a half-life of 2.8 days (calculated). Experimental studies show dimethyl sulfide is rapidly degraded in sunlight (natural and simulated) forming a number of breakdown products including sulfur dioxide. Dimethyl sulfide does not hydrolyze with hydrolysis half-lives of > 1 year at pH 4, 7 and 9.

Bioaccumulation / Accumulation: A low bioaccumulation potential is expected based on the partition coefficient Log Kow of 0.919. Dimethyl sulfide is readily biodegradable (67.4% degraded over 28 days; OECD TG 301D).

Mobility in Environment: Fugacity model Level III indicates dimethyl sulfide will distribute in air, water and sediment dependent on the route of the emission.
 Fugacity model Level III distribution with 100% of the dimethyl sulfide released to air is: 98.6% (air), 1.3% (water), 0.1% (soil) and <0.01% (sediment); with 100% of the dimethyl sulfide released to water the distribution is: 8.6% (air), 91.2% (water), 0.01% (soil) and 0.2% (sediment); with 100% of the dimethyl sulfide released to soil the distribution is: 39.4% (air), 7.2% (water), 53.4% (soil) and 0.01% (sediment).
 Fugacity model Level III distribution with equal release of dimethyl sulfide to air, water and soil is: 28.1% (air), 57.2% (water), 14.6% (soil) and 0.1% (sediment).

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN1164, DIMETHYL SULFIDE, 3, PG II

Class: 3

UN Number: UN1164

Packing Group: II

Label Code:



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Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN1164, DIMETHYL SULFIDE, 3, PG II

Class: 3

UN Number: UN1164

Packing Group: II

Label Code:



IMDG Transport Information

Proper Shipping Name: UN1164, DIMETHYL SULFIDE, 3, PG II

Class: 3

UN Number: UN1164

Packing Group: II

Label Code:



Flash point: -49 °C (-56.2 °F) (Closed Cup)

EmS Number: F-E, S-D

ICAO/IATA Transport Information

Proper Shipping Name: UN1164, DIMETHYL SULFIDE, 3, PG II

Class: 3

UN Number: UN1164

Packing Group: II

Label Code:



Flash point: -49 °C (-56.2 °F) (Closed Cup)

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.



SAFETY DATA SHEET

Federal Regulations

United States

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

No components are listed.

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

| Component | CAS No. | RTK List |
|------------------------|----------------|-----------------|
| Dimethyl sulfide (DMS) | 75-18-3 | E |

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

| Component | CAS No. | RTK List |
|------------------------|----------------|-----------------|
| Dimethyl sulfide (DMS) | 75-18-3 | SHHS |

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

| Component | CAS No. | RTK List |
|------------------------|----------------|-----------------|
| Dimethyl sulfide (DMS) | 75-18-3 | E |

Note: E = Environmental Hazard

California

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

Date of Preparation of SDS: October 18, 2017

Version: 1.2

GHS SDS Prepared by: Aegis Regulatory Inc.

Phone: (519) 488-0351

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