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DIMETHYL SULPHIDE MSDS

1. Identification

1.1 Product name Dimethyl sulfide

Product code: D 2101

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

Identified uses: Reagents

2. Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids Category 2

Serious eye damage/eye irritation Category 1

2.2 Label elements

Pictograms or hazard symbols

Signal word Danger

Hazard statements H225-Highly flammable liquid and vapour.

H318-Causes serious eye damage.

Precautionary statements P210-Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233-Keep container tightly closed.

P280-Wear protective gloves, face protection.

P303+P361+P353-IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or 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 or doctor.

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

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable

vPvB: Not applicable

3. Composition/information on ingredients

3.1

Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Dimethyl sulfide	Dimethyl sulfide	75-18-3	none	99%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest. Refer for medical attention.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Give one or two glasses of water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Inhalation causes moderate irritation of upper respiratory system. Contact of liquid with eyes causes moderate irritation. Repeated contact with skin may extract oils and result in irritation. Ingestion causes nausea and irritation of mouth and stomach. (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention.
/Sulfur and related compounds/

5.Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use CO₂, dry chemical

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic and irritating sulfur dioxide is formed. Behavior in Fire: Vapor is heavier than air and may travel considerable distance to source of ignition and flash back. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures

6.1 Personal precautions, protective

equipment and emergency procedures

Use extra personal protective equipment (self-contained breathing apparatus). Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc

6.2 Environmental precautions Prevent product from entering drains

6.3 Methods and materials for

containment and cleaning up

Absorb spilled material in dry sand or inert absorbent before recovering it into an airtight container. In case of large amount of spillage, contain a spill by bunding. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations. Remove all sources of ignition. Fire-extinguishing devices should be prepared in case of a fire. Use spark-proof tools and explosion-proof equipment.

7.Handling and storage

7.1 Precautions for safe handling Handling is performed in a well ventilated place. Wear suitable protective equipment. Prevent

generation of vapour or mist. Keep away from heat/sparks/open flame/hot surfaces. -No smoking. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Wash hands and face thoroughly after handling. Use a closed system if possible. Use a ventilation, local exhaust if vapour or aerosol will be generated. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage,

including any incompatibilities

Keep container tightly closed. Store in a cool, dark and well-ventilated place. Store away from incompatible materials such as oxidizing agents.

7.3 Specific end use(s) No further relevant information available

8.Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. 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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state (20°C): Liquid

Form: Clear

Colour: Colorless

Odour: Unpleasant

pH: No data available Melting point/freezing point: -98°C

Boiling point/range: 37°C

Flash point: -34°C

Flammability or explosive limits:

Lower: 2.2%

Upper: 19.7%

Vapour pressure: 53.2kPa/20°C

Vapour density: 2.1

Relative density: 0.85

Solubility(ies):

[Water] Slightly soluble (22g/L, 25°C)

[Other solvents]

Soluble: Ether, Alcohols

Partition coefficient:

n-octanol/water:0.84

Autoignition temperature: 205°C

Decomposition temperature: No data available Dynamic Viscosity: No data available Kinematic viscosity:

No data available

9.2 Other safety information No data available

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

Highly flammableThe vapour is heavier than air and may travel along the ground; distant ignition possible.Organosulfides, such as DIMETHYL SULFIDE, are incompatible with acids, diazo and azo compounds, halocarbons, isocyanates, aldehydes, alkali metals, nitrides, hydrides, and other strong reducing agents. Reactions with these materials generate heat and in many cases hydrogen gas. Many of these compounds may liberate hydrogen sulfide upon decomposition or reaction with an acid. Dimethyl sulfide rapidly decomposes dibenzoyl peroxide explosively in the absence of solvent, [J. Org. Chem., 1972, 37, 2885]. The sulfide also decomposes xenon difluoride explosively at ambient temps, [J. Chem Soc., 1984, 2827]. Interaction of dimethyl sulfide and oxygen is explosive at 210°C and above, [Atmos. Environ., 1967, 1, 491-497]. A delayed explosion occurred in a system containing nitric acid, dimethyl sulfide, and 1, 4-dioxane, even with cooling with liquid nitrogen, [Chem. Abs., 1972, 76, 13515

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Can react vigorously with oxidizing materials.

10.6 Hazardous decomposition products

Thermal decomposition in sulfur dioxide, carbon monoxide, and carbon dioxide.

11. Toxicological information

Acute toxicity

Oral: LD50 Rat oral 3300 mg/kg

Inhalation: LC50 Sprague-Dawley rat (male and female) inhalation 40,250 ppm for 4 hr

Dermal: no data available

Skin corrosion/irritation

no data available
Serious eye damage/irritation
no data available
Respiratory or skin sensitization
no data available
Germ cell mutagenicity
no data available
Carcinogenicity
no data available
Reproductive toxicity
no data available
STOT-single exposure
no data available
STOT-repeated exposure
no data available
Aspiration hazard
no data available

12. Ecological information

12.1 Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea); Concentration: 14300 ug/L for 24 hr; Effect: intoxication, immobilization /Conditions of bioassay not specified in source examined

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Dimethyl sulfide was initially present in a wastewater/recycled sludge mixture at 150 (ug/kg)/(ug/L); following activated sludge treatment, effluent concns were below the detection limit(7). Radiolabeled-dimethyl sulfide added to the head space over 1 ml of freshwater lake sediment was metabolized to methane and carbon dioxide; 33 and 5% radiolabeled carbon was converted to methane and carbon dioxide, respectively, in 8 hours(2). No degradation of dimethyl sulfide occurred in sterilized (heat killed - 70 °C, 1 hr) samples of sediment(2). Addition of dimethyl sulfide to various anoxic aquatic sediments (e.g. fresh water, estuarine, alkaline/hypersaline) stimulated methane production(3). The yield of methane from dimethyl sulfide typically ranged between 52-63%, although high concns of dimethyl sulfide inhibited methanogenesis in sediment from alkaline lakes(3). Metabolism resulted in appearance of methanethiol as a transient intermediate(3). Dimethyl sulfide was completely biodegraded in anoxic salt marsh sediments within 11 days with the production of methanethiol and methane(4). Biological consumption rates of dimethyl sulfide, in seawater samples collected in the eastern Pacific Ocean, ranged from 1.1 nM/day to 18.0 nM/day, giving turnover times of 0.6 to 4.6 days(5). The conversion efficiency from added dimethyl sulfide to methane of an algal mat and sediments obtained from a hypersaline pond was 11.2%(6).

12.3 Bioaccumulative potential

An estimated BCF of 3.2 was calculated in fish for dimethyl sulfide(SRC), using a water solubility of 22,000 mg/L(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil The Koc of dimethyl sulfide is estimated as 6.3(SRC), using a water solubility of 22,000 mg/L(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that dimethyl sulfide is expected to have very high mobility in soil.

12.5 Other adverse effects no data available

13. Disposal considerations

13.1 Disposal methods

Product The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: UN1164 IMDG: UN1164 IATA: UN1164

14.2 UN Proper Shipping Name

ADR/RID: DIMETHYL SULPHIDE

IMDG: DIMETHYL SULPHIDE

IATA: DIMETHYL SULPHIDE

14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packing group, if applicable

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

SECTION 15: Regulatory information

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

Water Hazard Classes (WGK) : Class 1 - Low hazard to waters

Substance of Very High Concern (SVHC) according to the

REACH Regulations (EC) No.1907/2006

Not listed

15.2 Chemical safety assessment A chemical safety assessment has not been carried out

SECTION 16: Other information

This SDS was prepared sincerely on the basis of the information we could obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. The products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling, sufficient care should be taken, in addition to the safety measures suitable for the situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility