Chemical Safety Data Sheet MSDS / SDS

Methanethiol SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Methanethiol

CAS: 74-93-1

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Gases under pressure: Compressed gas
Flammable gases, Category 1A, Flammable gas

Acute toxicity - Category 3, Inhalation
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H220 Extremely flammable gas
H331 Toxic if inhaled
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

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.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 In case of leakage, eliminate all ignition sources.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P391 Collect spillage.

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.
P403 Store in a well-ventilated place.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Methanethiol
Common names and synonyms:	Methanethiol
CAS number:	74-93-1
EC number:	200-822-1
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Refer for medical attention . ON FROSTBITE: rinse with plenty of water, do NOT remove clothes.

Following eye contact

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

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

Can cause death by respiratory paralysis. It is an eye and respiratory tract irritant. Exposure results in pulmonary edema and hepatic and renal damage. (EPA, 1998)

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

SECTION 5: Firefighting measures

Suitable extinguishing media

Stop flow of gas before extinguishing fire. Use water spray to control fire by preventing its spread and absorbing some of its heat.

Specific hazards arising from the chemical

Combustion produces irritating sulfur dioxide. Flash back along vapor track may occur. Very dangerous when exposed to heat, flame, or oxidizers. On decomposition it emits highly toxic fumes of sulfur oxides. It will react with water, steam or acids to produce toxic and flammable vapors; and can react vigorously with oxidizing materials. Irritating sulfur dioxide is produced upon combustion. When heated to decomposition, it emits highly toxic fumes and flammable vapors. Incompatible with mercuric oxide and oxidizing materials. Avoid direct sunlight, and areas of high fire hazards. Hazardous polymerization may not occur. (EPA, 1998)

Special protective actions for fire-fighters

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with powder, carbon dioxide. In case of fire: keep cylinder cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

Stop or control the leak, if this can be done with undue risk. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. Control runoff and isolate discharged material for proper disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants and acids. Cool. Store in an area without drain or sewer access.Separate from oxidizing materials. Store in a cool, dry, well-ventilated location.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.5 ppm as TWA.MAK: 1.0 mg/m3, 0.5 ppm; peak limitation category: II(2); pregnancy risk group: D

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

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

Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection.

Skin protection

Cold-insulating gloves.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Methyl mercaptan is a colorless low-boiling liquid that is denser than water. Very toxic by inhalation. Can be absorbed through the skin. Has a sharp odor, but the sense of smell cannot be relied upon to warn of the presence of vapors at low concentrations. Rate of onset: Immediate Persistence: Minutes to hours Odor threshold: 0.002 ppm Source/use/other hazard: From decayed organic matter - pulp mills, oil refineries; highly flammable; liquid burns/frostbite.
Colour:	Water-white liquid when below boiling point, or colorless gas
Odour:	Odor of rotten cabbage
Melting point/freezing point:	2°C
Boiling point or initial boiling point and boiling range:	6°C(lit.)
Flammability:	Flammable Gas
Lower and upper explosion limit/flammability limit:	Lower flammable limit:3.9% by volume; Upper flammable limit:21.8% by volume

Flash point:	-18°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	2 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 0.78 (est)
Vapour pressure:	1536 mm Hg (20 °C)
Density and/or relative density:	0.8665
Relative vapour density:	1.66 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic fumes including sulfur oxides and hydrogen sulfide. Reacts violently with strong oxidants. Reacts with water, steam and acids. This produces flammable and toxic gas.

Chemical stability

no data available

Possibility of hazardous reactions

Very dangerous, when exposed to heat, flame; can react vigorously with oxidizing materials.The gas is heavier than air and may travel along the ground; distant ignition possible.METHYL MERCAPTAN is a reducing agent--can react vigorously with oxidizing

agents. Dangerous fire or explosion hazard when exposed to heat, flame, sparks or strong oxidizing agents (e.g., calcium hypochlorite). When heating to decomposition emits highly toxic fumes of oxides of sulfur [Lewis, 3rd ed., 1993, p. 862]. Violent reaction with mercury(II) oxide [Klason P., Ber., 1887, 20, p. 3410].

Conditions to avoid

no data available

Incompatible materials

Can react dangerously with strong oxidizing agents and mercury (II) oxide.

Hazardous decomposition products

Upon decomposition, emits highly toxic fumes of /sulfur oxides/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 61 mg/kg

Inhalation: LC50 Mouse inhalation 1,664 ppm/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

The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. This may result in respiratory depression. Exposure at high levels could cause unconsciousness. Exposure at high levels could cause death. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Aerobic degradation of methyl mercaptan is insignificant compared to anaerobic degradation(1).

Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for methyl mercaptan(SRC), using an estimated log Kow of 0.78(1) and a regression-derived equation(1). According to a classification scheme(2, this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of methyl mercaptan can be estimated to be 13(SRC). According to a classification scheme(2), this estimated Koc value suggests that methyl mercaptan is expected to have very high mobility in soil. Gaseous methyl mercaptan has been observed to partition to soils(3). For example, when gaseous methyl mercaptan was passed over six air-dried and moist (50% field capacity) soils, 2.4-32.1 mg/g and 2.2-21.4 mg/g of methyl mercaptan rapidly adsorbed to the dry and moist soils, respectively(3). Neither the capacity or rate of sorption was correlated to soil pH, organic matter content, or clay content; sterile controls ruled out the involvement of microorganisms(3); it was suggested that adsorption to soil surfaces might be an environmental sink for gaseous methyl mercaptan(3).

Other adverse effects

no data available

SECTION 13: Disposal considerations

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.

SECTION 14: Transport information

UN Number

ADR/RID: UN1064 (For reference only, please check.)
IMDG: UN1064 (For reference only, please check.)
IATA: UN1064 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: METHYL MERCAPTAN (For reference only, please check.)
IMDG: METHYL MERCAPTAN (For reference only, please check.)
IATA: METHYL MERCAPTAN (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.3 (For reference only, please check.)
IMDG: 2.3 (For reference only, please check.)
IATA: 2.3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: (For reference only, please check.)
IMDG: (For reference only, please check.)
IATA: (For reference only, please check.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.