Chemical Safety Data Sheet MSDS / SDS

Methyloxirane 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: Methyloxirane

CAS: 75-56-9

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

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 1
Acute toxicity - Category 4, Oral

Acute toxicity - Category 3, Dermal
Eye irritation, Category 2
Acute toxicity - Category 3, Inhalation
Specific target organ toxicity – single exposure, Category 3
Germ cell mutagenicity, Category 1B
Carcinogenicity, Category 1B

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H224 Extremely flammable liquid and vapour
H302 Harmful if swallowed
H311 Toxic in contact with skin
H319 Causes serious eye irritation
H331 Toxic if inhaled
H335 May cause respiratory irritation
H340 May cause genetic defects
H350 May cause cancer

Precautionary statement(s)

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.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.

Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P370+P378 In case of fire: Use ... to extinguish.
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
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 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.
P318 IF exposed or concerned, get medical advice.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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:	Methyloxirane
Common names and synonyms:	Methyloxirane
CAS number:	75-56-9
EC number:	200-879-2

Concentration: 100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Seek medical attention if you feel unwell.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention if breathing difficulties and/or fever develop.

Most important symptoms/effects, acute and delayed

This material is moderately toxic by inhalation and ingestion. It may cause irreversible and reversible changes. Skin contact with the material or solutions of the material cause irritation; diluted solutions are more irritating than undiluted materials. Exposure may cause mild depression of the central nervous system and eye, nasal, and lung irritation. Contact with the liquid can cause blindness and death. Pulmonary edema may recur up to 2 weeks after exposure. (EPA, 1998)

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

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Provide a low-stimulus environment. Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Treat frostbite by rapid rewarming . Ethers and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as a fog. Solid streams of water may be ineffective. Cool all effective containers with flooding quantities of water. Apply water from as far away as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical

Vapor is heavier than air and may travel considerable distance to source of ignition and flash back. Vapors form explosive mixture with air. If polymerization takes place in container, there may be a violent rupture of container. Explosion hazard is severe when exposed to flame. Violently reacts with acetylide- forming metals such as copper or copper alloys, ammonium hydroxide; chlorosulfonic acid; hydrochloric acid; hydrofluoric acid; nitric acid; oleum and sulfuric acid. Hazardous polymerization may occur. Avoid active catalytic surfaces such as anhydrous chlorides of iron, tin, and aluminum; peroxides of iron and aluminum; and alkali metal hydroxides, high temperatures; alkalies; aqueous acids; amines and acidic alcohols. (EPA, 1998)

Special protective actions for fire-fighters

Use alcohol-resistant foam, foam, water spray. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Remove all ignition sources. Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable dry containers. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Evacuate danger area! Consult an expert! Remove all ignition sources. Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable dry containers. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Evacuation: If material leaking (not on fire) consider evacuation from downwind area based on amount of material spilled, location and weather conditions.

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. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools. 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 acids, bases and strong oxidants. Dry. Cool. Well closed. Keep in the dark.Use glass or metal containers sealed with nitrogen.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 2 ppm as TWA; (SEN); A3 (confirmed animal carcinogen with unknown relevance to humans).EU-OEL: 2.4 mg/m3, 1 ppm as TWA.MAK: 4.8 mg/m3, 2 ppm; peak limitation category: I(2); sensitization of skin (SH); carcinogen category: 4; pregnancy risk group: C.EUL : EUL :

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

Protective gloves. Protective clothing.

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:	Propylene oxide is a clear colorless volatile liquid with an ethereal odor. Flash point -35°F. Boiling point 95°F. Density 6.9 lb./gal. Flammable over a wide range of vapor-air concentrations. If contaminated, may polymerize with evolution of heat and possible rupture of container. Vapors irritate eyes, skin, and respiratory system. Prolonged contact with skin may result in delayed burns. Vapors heavier than air. Used as a fumigant, in making detergents and lubricants, and to make other chemicals.
Colour:	Colorless liquid ... [Note: A gas above 94 degrees F.]
Odour:	ODOR IS SWEET, ALCOHOLIC, & LIKE ETHER OR BENZENE
Melting point/freezing point:	-112°C
Boiling point or initial boiling point and boiling range:	34°C(lit.)
Flammability:	Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 2.3% by volume; Upper flammable limit: 36% by volume
Flash point:	-37°C
Auto-ignition temperature:	1378°F
Decomposition temperature:	no data available
pH:	no data available

Kinematic viscosity:	0.28 centipoise at 25 deg C
Solubility:	greater than or equal to 100 mg/mL at 66° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow= 0.03.
Vapour pressure:	445 mm Hg at 68° F (EPA, 1998)
Density and/or relative density:	0.83g/mLat 25°C(lit.)
Relative vapour density:	2 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH considers propylene oxide to be a potential occupational carcinogen. /SRP: No IDLH value specified/.
The substance may violently polymerize under the influence of bases, acids and metal chlorides. This generates fire and explosion hazard. Reacts violently with chlorine, ammonia, strong oxidants and acids. This generates fire or explosion hazard.

Chemical stability

It polymerizes exothermically.

Possibility of hazardous reactions

FLAMMABLE, DANGEROUS FIRE RISKThe vapour is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated.1,3-PROPYLENE OXIDE react with oxidizing agents and strong acids (NTP, 1992). Reacts with Grignard reagents and organolithium compounds. An explosion occurred when propylene oxide was added to an epoxy resin. It was concluded that polymerization was catalyzed by an amine accelerator in the resin [Bretherick, 5th Ed., 1995]. Underwent polymerization when mixed with sodium hydroxide causing ignition and explosion of a drum of the crude product. [Combust Sci. Technol., 1983].

Conditions to avoid

no data available

Incompatible materials

No acetylide-forming metals such as copper or copper alloys should be in contact with propylene oxide.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Guinea pig /oral/ 0.69 g/kg

Inhalation: LC50 Mouse inhalation 1740 ppm/4 hr

Dermal: LD50 Rabbit percutaneous 1.5 ml/kg

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

Cancer Classification: Group B2 Probable Human Carcinogen

Reproductive toxicity

No information is available on the reproductive or developmental effects of propylene oxide in humans. A study with rats and rabbits exposed to propylene oxide by inhalation prior to and during gestation concluded that propylene oxide was harmful to the developing fetus but did not cause birth defects. In rats, some degree of fetotoxicity was observed in all exposed groups (including a significant reduction in the number of corpora lutea, implants, and live fetuses) and minor skeletal malformations in some; there was no maternal mortality. Increased resorptions per litter were observed in rabbits.

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. If swallowed the substance may cause vomiting and could result in aspiration pneumonitis.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. This substance is possibly carcinogenic to humans.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: TLm Bluegill 215 mg/l/96 hr at 24 deg C, static bioassay.

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: 1,2-Propylene oxide, present at 100 mg/l, reached 95% of its theoretical BOD in 3 weeks using an activated sludge inoculum at 30 mg/l and the Japanese MITI test(1); therefore, this compound is expected to biodegrade rapidly. In another study, using the standard dilution method, a 5 day theoretical BOD of 8% was measured for propylene oxide using a filtered effluent seed from a biological sanitary waste treatment plant while a 5 day theoretical BOD of 9% was measured using an adapted seed(2).

Bioaccumulative potential

An estimated BCF of 3 was calculated for 1,2-propylene oxide(SRC), using a log Kow of 0.03(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).

Mobility in soil

The Koc of 1,2-propylene oxide is estimated as 25(SRC), using a measured log Kow of 0.03(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that 1,2-propylene oxide is expected to have very high mobility in soil(SRC).

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: UN1280 (For reference only, please check.)
IMDG: UN1280 (For reference only, please check.)
IATA: UN1280 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: PROPYLENE OXIDE (For reference only, please check.)

IMDG: PROPYLENE OXIDE (For reference only, please check.)
IATA: PROPYLENE OXIDE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)
IMDG: 3 (For reference only, please check.)
IATA: 3 (For reference only, please check.)

Packing group, if applicable

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

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

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

Do NOT take working clothes home.