

Chemical Safety Data Sheet MSDS / SDS

Dimethyl ether SDS

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

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

Product name: Dimethyl ether

CAS: 115-10-6

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: Liquefied gas

Flammable gases, Category 1A, Flammable gas

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H220 Extremely flammable gas

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 In case of leakage, eliminate all ignition sources.

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.

P403 Store in a well-ventilated place.

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name: Dimethyl ether

Common names and synonyms: Dimethyl ether

CAS number: 115-10-6
EC number: 204-065-8
Concentration: 100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Rinse skin with plenty of water or shower.

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

Inhalation produces some anesthesia (but less than that of ethyl ether), blurring of vision, headache, intoxication, loss of consciousness. Liquid or concentrated vapor irritates eyes. Contact of liquid with skin may cause frostbite. (USCG, 1999)

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

INHALATION: Symptoms: Cough. Sore throat. Confusion. Drowsiness. Unconsciousness. First aid: Fresh air, rest. Refer for medical attention. SKIN: Symptoms: ON CONTACT WITH LIQUID: FROSTBITE. First aid: ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Rinse skin with plenty of water or shower. EYES: Symptoms: Redness. Pain. First aid: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

SECTION 5: Firefighting measures

Suitable extinguishing media

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

Specific hazards arising from the chemical

Behavior in Fire: Containers may explode. Vapors are heavier than air and may travel long distance to a source of ignition and flash back. (USCG, 1999)

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 dry powder, carbon dioxide. In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources.

Methods and materials for containment and cleaning up

Eliminate all ignition sources. Stop or control the leak, if this can be done without undue risk. Use water spray to cool & disperse vapors, protect personnel, & dilute spills to form nonflammable mixtures. Control runoff & isolate discharged material for proper disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with hot surfaces. 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. Cool. Separate from oxidizing materials. Store in cool, dry, well-ventilated area. Avoid sunlight.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

EU-OEL: 1920 mg/m³, 1000 ppm as TWA. MAK: 1900 mg/m³, 1000 ppm; peak limitation category: II(8); 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:	Dimethyl ether is a colorless gas with a faint ethereal odor. It is shipped as a liquefied gas under its vapor pressure. Contact with the liquid can cause frostbite. It is easily ignited. Its vapors are heavier than air. Any leak can be either liquid or vapor. It can asphyxiate by the displacement of air. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket.
Colour:	COLORLESS GAS @ USUAL TEMP, BUT EASILY CONDENSIBLE
Odour:	Slight ethereal odor
Melting point/freezing point:	-138.5°C
Boiling point or initial boiling point and boiling range:	?24.8°C(lit.)
Flammability:	Extremely flammable.
Lower and upper explosion limit/flammability limit:	Lower flammable limit:3.4% by volume; Upper flammable limit: 27.0% by volume
Flash point:	-41°C
Auto-ignition temperature:	662°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	825 at 0 deg C
Solubility:	1 vol water takes up 37 vol gas
Partition coefficient n-octanol/water:	log Kow = 0.10
Vapour pressure:	>760 mm Hg (25 °C)
Density and/or relative density:	0.678 g/cm ³

Relative vapour density:	1.62 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance can form explosive peroxides under the influence of light and air. On combustion, forms irritating fumes. Reacts with oxidants.

Chemical stability

no data available

Possibility of hazardous reactions

DANGEROUS; WHEN HEATED OR EXPOSED TO FLAME OR OXIDIZERS. The gas is heavier than air and may travel along the ground; distant ignition possible. The gas is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. DIMETHYL ETHER is a colorless, highly flammable gas (b. p. -24°C), slightly toxic. Very dangerous fire and explosion hazard when exposed to flame, sparks, heat or strong oxidizers. Violent reaction with aluminum hydride, lithium aluminum hydride. Upon standing and exposure to air (oxygen) tendency to form explosive peroxides. When ethers containing peroxides are heated (distilled) they can detonate [Lewis, 3rd ed., 1993, p. 854].

Conditions to avoid

no data available

Incompatible materials

Forms explosive mixture with air. Forms unstable peroxides in containers that been opened or remain in storage for more than 6 months. Peroxides can be detonated by friction, impact or heating. Violent reaction with strong oxidizers, aluminum hydride, lithium aluminum hydride. Keep away from heat, air, sunlight.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: LC50 Mouse inhalation 385.94 ppm (30 min)

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

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes and respiratory tract. Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the central nervous system. Exposure could cause lowering of consciousness.

STOT-repeated exposure

no data available

Aspiration hazard

On loss of containment, a harmful concentration of this gas in the air will be reached very quickly, especially in confined spaces.

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: Dimethyl ether, at 100 mg/L reached 0 to 1% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test(1).

Bioaccumulative potential

An estimated BCF of 3 was calculated for dimethyl ether(SRC), using a log Kow of 0.10(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 dimethyl ether is estimated as approximately 27(SRC), using a log Kow of 0.10(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that dimethyl ether 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: UN1033 (For reference only, please check.)

IMDG: UN1033 (For reference only, please check.)

IATA: UN1033 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: DIMETHYL ETHER (For reference only, please check.)

IMDG: DIMETHYL ETHER (For reference only, please check.)

IATA: DIMETHYL ETHER (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.1 (For reference only, please check.)

IMDG: 2.1 (For reference only, please check.)

IATA: 2.1 (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: 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

Check oxygen content before entering area. High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check for peroxides prior to distillation; eliminate if found.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any