SECTION 1: Identification

1.1 GHS Product identifier

Product name Oxybis[chloromethane]

1.2 Other means of identification

Product number -
Other names dichlorodimethyl ether; Methane,oxybis[chloro; monochloromethyl ether

1.3 Recommended use of the chemical and restrictions on use

Identified uses Nitrosamines/ethers/alcohols
Uses advised against no data available

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 2
Acute toxicity - Category 4, Oral
Acute toxicity - Category 3, Dermal
Acute toxicity - Category 2, Inhalation
Carcinogenicity, Category 1A

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour
H302 Harmful if swallowed
H311 Toxic in contact with skin
H330 Fatal if inhaled
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.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P284 [In case of inadequate ventilation] wear respiratory protection.
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.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P320 Specific treatment is urgent (see ... on this label).
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.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Oxybis[chloromethane]	Oxybis[chloromethane]	542-88-1	208-832-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.

Following skin contact

Wear protective gloves when administering first aid. First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer immediately for medical attention .

Following eye contact

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

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention.

4.2 Most important symptoms/effects, acute and delayed

Acute toxicity is high by ingestion, inhalation, and skin irritation. Small quantities may cause death or permanent injury after very short exposure. Chloromethyl ether is an alkylating agent which is a recognized human carcinogen. There is a strong association between industrial exposure and excess lung cancer. (EPA, 1998)

4.3 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: Fire-fighting measures

5.1 Suitable extinguishing media

Move container from fire area if you can do so without risk. Fight fire from maximum distance. Dike fire control water for later disposal; do not scatter the material. Small fires: dry chemical, carbon dioxide, water spray, or foam. Large fires: water spray, fog, or foam. (EPA, 1998)

5.2 Specific hazards arising from the chemical

Container may explode in heat of fire. When heated to decomposition, it emits very toxic fumes of chlorides. Decomposed by water to hydrochloric acid and formaldehyde. Avoid water: hydrolyzes very rapidly (half life 10-40 seconds) on contact with water. Avoid decomposing heat, powerful oxidizers, areas of high fire hazard and moist air. (EPA, 1998)

5.3 Special protective actions for fire-fighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water. NO direct contact with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

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

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Residues and wastes from expt in which ... bis(chloromethyl) ether ... used should be treated for 10 min with concn aqueous ammonia.

SECTION 7: Handling and storage

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Dry. Cool. Separated from food and feedstuffs. Store only in original packaging.PRECAUTIONS FOR "CARCINOGENS": Storage site should be as close as practicable to lab in which carcinogens are to be used, so that only small quantities required for ... expt need to be carried. Carcinogens should be kept in only one section of cupboard, an explosion-proof refrigerator or freezer (depending on chemicophysical properties ...) that bears appropriate label. An inventory ... should be kept, showing quantity of carcinogen & date it was acquired ... Facilities for dispensing ... should be contiguous to storage area. Chemical Carcinogens

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 0.001 ppm as TWA; A1 (confirmed human carcinogen).MAK: carcinogen category: 1

Biological limit values

no data available

8.2 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.

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

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective clothing. Protective gloves.

Respiratory protection

Use closed system or ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Dichlorodimethyl ether, symmetrical is a colorless volatile liquid with a chloroform-like odor. Toxic by inhalation, skin absorption and ingestion. Dangerous fire risk - flash point below 0Â°F. Vapors much denser than air. Insoluble in water and denser than water. Used to make paints and varnish, and as a solvent.
Colour	COLORLESS LIQUID
Odour	Suffocating odor
Melting point/freezing point	-41.5ÂºC
Boiling point or initial boiling point and boiling range	106ÂºC at 760mmHg
Flammability	Class IB Flammable Liquid: Fl.P. below 73Â°F and BP at or above 100Â°F.
Lower and upper explosion limit/flammability limit	no data available
Flash point	74.9ÂºC
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Reacts with water (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow= 1.04
Vapour pressure	30 mm Hg at 71.6Â° F (EPA, 1998)
Density and/or relative density	1.267g/cm3
Relative vapour density	4 (EPA, 1998) (Relative to Air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

NIOSH considers bis-chloromethyl ether to be a potential occupational carcinogen.
Decomposes on heating and on contact with water. This produces toxic and corrosive fumes of hydrogen chloride (see ICSC 0163) and formaldehyde. Attacks many metals, plastics and resins.

10.2 Chemical stability

Unstable in moist air

10.3 Possibility of hazardous reactions

COMMON ETHERS SUCH AS ETHYL & METHYL ARE PARTICULARLY DANGEROUS FIRE HAZARDS. THE COMMON ONES ARE EASILY IGNITED & HAVE LOW FLASH POINTS. /ETHERS/The vapour mixes well with air, explosive mixtures are easily formed.DICHLORODIMETHYL ETHER is incompatible with the following: Acids, water [Note: Reacts with water to form hydrochloric acid & formaldehyde.] (NIOSH, 2016).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Dangerous on contact with acids or acid fumes they evolve highly toxic /hydrogen chloride/ fumes. chlorides

10.6 Hazardous decomposition products

Decomposed by water to hydrochloric acid & formaldehyde

SECTION 11: Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- 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

NTP: Known to be a human carcinogen

Reproductive toxicity

No information is available on the reproductive and developmental effects of BCME in humans. No effects on the testes were noted in a study of rats exposed by inhalation.

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation may cause lung oedema. See Notes. The effects may be delayed. Exposure at high concentrations could cause death.

STOT-repeated exposure

This substance is carcinogenic to humans.

Aspiration hazard

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

SECTION 12: Ecological information

12.1 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

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Hydrolysis half-lives are sufficiently fast (hydrolysis occurs in pure water with a half-life <1-38 seconds(1,2)) to preclude any possibility of bioconcentration in the food chain(SRC).

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

SECTION 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.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2249 (For reference only, please check.) IMDG: UN2249 (For reference only, please check.) IATA: UN2249 (For reference only, please check.)

14.2 UN Proper Shipping Name

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

14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.) IMDG: 6.1 (For reference only, please check.) IATA: 6.1 (For reference only, please check.)

14.4 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.)

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 IMO instruments

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Oxybis[chloromethane]	Oxybis[chloromethane]	542-88-1	208-832-8
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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	July 15, 2019

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

Depending on the degree of exposure, periodic medical examination is suggested.The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort.Rest and medical observation are therefore essential.