

# SAFETY DATA SHEET



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## PROPYLENE OXIDE

SDS No. M0182

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Propylene Oxide

Synonyms: Oxirane, Methyl; Propene Oxide; Epoxy Propane; 1,2-Propylene Oxide; 1,2-Epoxypropane; Methyl Ethylene Oxide

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

### 2. HAZARDS IDENTIFICATION



**Classification:**

Flammable Liquids: GHS Category 3

Acute Toxicity, Oral: GHS Category 4

Acute Toxicity, Inhalation: GHS Category 3

Acute Toxicity, Dermal: GHS Category 3

Skin Irritation: GHS Category 2

Serious Eye Damage: GHS Category 1

Germ Cell Mutagenicity: GHS Category 1B

Carcinogenicity: GHS Category 1B

Specific Target Organ Toxicity, Single Exposure: GHS Category 3

Acute Aquatic Toxicity: GHS Category 3

Chronic Aquatic Toxicity: GHS Category 3

**Label Elements**

Signal Word: DANGER!

Hazard Statements:

- H224 – Extremely flammable liquid and vapor.
- H302 – Harmful if swallowed.
- H311 – Toxic in contact with skin
- H315 – Cause skin irritation.
- H318 – Causes serious eye damage.
- H335 – May cause respiratory irritation.
- H340 – May cause genetic defects.

Clear focus. Consistent results. Complete confidence.

H350 – May cause cancer.

H412 – Harmful to aquatic life with long lasting effects.

**Precautionary Statements:**

P202 – Do not handle until all safety precautions have been read and understood.

P210 – Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P243 – Take precautions against static discharge.

P273 – Avoid release to the environment.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

**Emergency Overview**

Harmful if swallowed, inhaled, or absorbed through the skin. Causes severe eye irritation. May cause lung damage. Highly flammable liquid and vapor. Target Organs: Lungs, mucous membranes, skin, and eyes.

**HMIS Rating:**

Health – 3\* Flammability – 4 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

**3. COMPOSITION AND INFORMATION ON INGREDIENTS**

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Propylene Oxide	75-56-9	>99%	Yes

**4. FIRST-AID MEASURES**

**Inhalation:** Get medical help immediately. If inhaled, remove to fresh air. If breathing is labored, give supplemental oxygen. If not breathing, begin artificial respiration.

**Ingestion:** Get medical help immediately. Do not induce vomiting. If vomiting begins naturally, have victim lean forward. Never give anything by mouth to an unconscious person.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Notes to Physician:** Treat symptomatically and supportively.

**5. FIRE FIGHTING MEASURES**

**Flammability:** Highly flammable liquid and vapor (GHS Category 2)

**Auto-ignition Temperature:** 449° C (840° F)

**Flash Point:** -37° C (-34° F)

**Flammable Limits:** Lower Limit – 2.3 vol %, Upper Limit – 36.0 vol %

**Products of Combustion:** Will decompose into highly toxic and irritating gases (carbon monoxide, carbon dioxide) under fire conditions.

**Specific Fire Hazards:** As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Vapors can flow along surfaces to distant ignition source and flash back. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Combustion generates toxic fumes.

**Specific Explosion Hazards:** Above the flash point, explosive vapor-air mixtures may be formed.

**Fire Fighting Media:** Use water spray, dry chemical, carbon dioxide, or alcohol foam.

**National Fire Protective Association:** Health - 3, Flammability - 4, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

## 6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Evacuate unnecessary personnel. Use only non-sparking tools and equipment. Use water spray to cool and disperse vapors. Always use proper personal protective equipment as described in section 8.

## 7. HANDLING AND STORAGE

**Precautions:** Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Workers using this substance need preplacement and annual medical exams. Special training should be given to workers. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor.

**Storage:** Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container and store under a nitrogen blanket. Store in a cool, dry, well-ventilated area away from incompatible substances.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** Use explosion-proof ventilation equipment. Local ventilation is preferred because it controls emissions of contaminants at the source. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Personal Protection:** Wear protective chemical goggles or appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**Exposure Limits:**

- ACGIH – 20 ppm TWA; 48 mg/m<sup>3</sup> TWA;
- NIOSH – 400 ppm IDLH
- OSHA Final PELs – 100 ppm TWA; 240 mg/m<sup>3</sup> TWA;

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State and Appearance:** Liquid.

**Odor:** Not available

**Molecular Formula:** CH<sub>3</sub>CH(OH)CH<sub>2</sub>OH

**Molecular Weight:** 58.08

**Auto-ignition Temperature:** 449° C (840° F)

**Flash Point:** -37° C (-34° F)

**Flammable Limits:** Lower Limit – 2.3 vol %, Upper Limit – 36.0 vol %

**pH:** Not available

**Boiling Point:** 34° C (93° F)

**Freezing/Melting Point:** -112° C (-169° F)

**Decomposition Temperature:** Not available

**Specific Gravity (water = 1):** 0.83

**Evaporation Rate (n-Butyl acetate = 1):** Not available

Vapor Density (Air=1): 2.0

Vapor Pressure: 442 mm Hg @ 44° C

Viscosity: Not available

Solubility: Soluble

## 10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage. Due to low electric conductivity, the substance can generate electrostatic charges as a result of flow, agitation, etc.

Conditions to Avoid: Ignition sources, heat, flame, incompatibles.

Incompatibility With Various Substances: Anhydrous metal chlorides, iron, strong acids, caustics, peroxides.

Hazardous Decomposition Products: Carbon monoxide, carbon, dioxide.

Hazardous Polymerization: May occur due to high temperatures or contamination with alkalis, aqueous acids, amines, acidic alcohols.

## 11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Harmful if inhaled. May cause damage to lungs and mucous membranes.

INGESTION HAZARD: Harmful if swallowed. May cause damage to lungs and mucous membranes.

SKIN CONTACT HAZARD: Harmful if absorbed through the skin with symptoms paralleling those of ingestion exposure. Causes skin irritation.

EYE CONTACT HAZARD: Causes severe eye irritation with redness, watering and itching.

Chronic Exposure Hazards: Repeated or prolonged exposure may cause damage to lungs, mucous membranes, skin, and eyes.

Animal Toxicity:

Oral, rat: LD50 = 380 mg/kg;

Inhalation, rat: LC50 = 4000 ppm/4H;

Skin, rabbit: LD50 = 1500 mg/kg;

Carcinogenicity: NTP Class 2 (reasonably anticipated) carcinogen. California: Warning. This product contains a chemical known to the state of California to cause cancer

Epidemiology: No information found.

Teratogenicity: No information found.

Reproductive Effects: May cause reproductive effects.

Mutagenicity: Laboratory experiments and in vivo tests have shown mutagenic effects.

Neurotoxicity: No information found.

## 12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Environmental Fate: Hazardous short term degradation products are not likely. Long term degradation products may occur and be as hazardous as the original material.

## 13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. TRANSPORT INFORMATION

### US DOT

Proper Shipping Name: Propylene Oxide

Hazard Class: 3

UN Number: UN1280

Packing Group: I

### IMDG

Proper Shipping Name: Propylene Oxide

Hazard Class: 3

UN Number: UN1280

Packing Group: I

### IATA

Proper Shipping Name: Propylene Oxide

Hazard Class: 3

UN Number: UN1280

Packing Group: I

## 15. REGULATORY INFORMATION

### US Federal Regulations:

CERCLA Hazardous Substances: CAS# 75-56-9 – 100 lb final RQ; 45.4 kg final RQ

SARA Section 302: 10,000 lb TPQ

SARA Codes: CAS# 75-56-9 – acute, chronic, fire, reactive

Section 313: Propylene Oxide (CAS# 75-56-9) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 75-56-9 is listed as a hazardous air pollutant (HAP).

OSHA: Not considered highly hazardous by OSHA.

### US State Regulations:

CAS# 75-56-9 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California: Warning! This product contains propylene glycol, a chemical known to the State of California to cause cancer.

## 16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 11/19/2014 – Updated hazard categories, hazard statements, and precautionary measures in Section 1 and incompatibilities with various substances in Section 10.

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