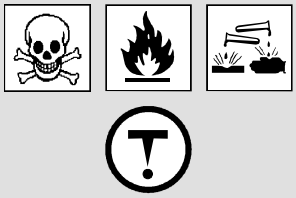
TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**Toxic compound, do not ingest or inhale. Avoid all contact with this material.** **Flammable material; avoid heat and sources of ignition.** **Corrosive to eyes and skin on contact.** **CARCINOGEN. MINIMIZE EXPOSURE.** **Readily absorbed through skin.** **May develop pressure.** **Cool to 0° C before opening.** **Heat sensitive.**	

Section I. Chemical Product and Company Identification

Chemical Name **Propylene Oxide**

Catalog Number	E0016
Synonym	1,2-Epoxypropane
Chemical Formula	C_3H_6O
CAS Number	75-56-9

Supplier
TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call
Chemtrec®
(800) 424-9300 (U.S.)
(703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Propylene Oxide	75-56-9	Min. 99.0(GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LC_{50} (inhalation) 4000ppm/4H Rat LD_{50} (oral) 380mg/kg Rabbit LD_{50} (dermal) 1500µl/kg

Section III. Hazards Identification

Acute Health Effects

Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.
Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested.
Readily absorbed through skin.
Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS:
Rat TCLo (Inhalation), 100ppm/7 Hours/2 Years, intermittent.
Toxic Effects:
Tumorigenic- Neoplastic by RTECS criteria.
Endocrine- Tumors.
Rat TDLo (Oral), 10798mg/kg/2 Years, intermittent.
Toxic Effects:
Tumorigenic- Carcinogenic by RTECS criteria.
Gastrointestinal- Tumors.
Mouse TDLo (Subcutaneous), 272mg/kg/95 Weeks, intermittent.
Toxic Effects:
Tumorigenic- Carcinogenic by RTECS criteria.
Blood- Lymphomas including Hodgkin's disease.
Tumorigenic- Tumors at site of application.
DEVELOPMENTAL TOXICITY: REPRODUCTIVE EFFECTS:
Rat TCLo (Inhalation), 500ppm/7 Hours, female 7-16 Days of pregnancy.
Toxic Effects:
Effects on Embryo or Fetus- Fetotoxicity.
Specific Developmental Abnormalities- Musculoskeletal system.
Rat TCLo (Inhalation), 500ppm/7 Hours, female, 15 Days prior to mating and 1-16 Days of pregnancy.
Toxic Effects:
Effects on Fertility- Pre-implantation mortality.
Effects on Fertility- Litter size.
Effects on Fertility- Other measures of fertility.
Rat TDLo (Intraperitoneal), 1860mg/kg, male, 6 Weeks prior to mating.
Toxic Effects:
Paternal Effects- Spermatogenesis.
Paternal Effects- Testes, epididymis, sperm duct.
Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Continued on Next Page *Emergency phone number (800) 424-9300*

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	748°C (1378.4°F)
Flash Points	-37°C (-34.6°F).	Flammable Limits	LOWER: 2.1% UPPER: 37%
Combustion Products	These products are toxic carbon oxides (CO, CO_2).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic material. Flammable material. Corrosive material. Carcinogenic material. Readily absorbed through skin. May develop pressure. Cool to 0 ° C before opening. Heat sensitive. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	TOXIC. FLAMMABLE. CORROSIVE. CARCINOGEN. READILY ABSORBED THROUGH SKIN. MAY DEVELOP PRESSURE. COOL TO 0 ° C BEFORE OPENING. HEAT SENSITIVE. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids, alkalis (bases).

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. 
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Colorless.)	Solubility	40.5 wt% water @ 20 ° C. Miscible with acetone, benzene, carbon tetrachloride, methanol, and ether.
Specific Gravity	0.83 (water=1)		
Molecular Weight	58.08	Partition Coefficient	Not available.
Boiling Point	34°C (93.2°F)	Vapor Pressure	71.7 kPa (@ 20°C)
Melting Point	-112°C (-169.6°F)	Vapor Density	2.0 (Air = 1)
Refractive Index	1.3670 @ 20 ° C	Volatility	Not available.
Critical Temperature	Not available.	Odor	Sweet, alcoholic, and like ether or benzene.
Viscosity	Dynamic: 0.28 cP @ 25 ° C	Taste	In foods, Propylene oxide has no residual taste.

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Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Heat sensitive. Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents, strong acids, strong alkalis (bases), copper, copper alloys, peroxides, amines.

Section XI. Toxicological Information

RTECS Number	TZ2975000
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LC_{50} (inhalation) 4000ppm/4H Rat LD_{50} (oral) 380mg/kg Rabbit LD_{50} (dermal) 1500µl/kg
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Carcinogenic by RTECS criteria. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : TUMORIGENIC EFFECTS: Rat TCLo (Inhalation), 100ppm/7 Hours/2 Years, intermittent. Toxic Effects: Tumorigenic- Neoplastic by RTECS criteria. Endocrine- Tumors. Rat TDLo (Oral), 10798mg/kg/2 Years, intermittent. Toxic Effects: Tumorigenic- Carcinogenic by RTECS criteria. Gastrointestinal- Tumors. Mouse TDLo (Subcutaneous), 272mg/kg/95 Weeks, intermittent. Toxic Effects: Tumorigenic- Carcinogenic by RTECS criteria. Blood- Lymphomas including Hodgkin's disease. Tumorigenic- Tumors at site of application. **DEVELOPMENTAL TOXICITY**: REPRODUCTIVE EFFECTS: Rat TCLo (Inhalation), 500ppm/7 Hours, female 7-16 Days of pregnancy. Toxic Effects: Effects on Embryo or Fetus- Fetotoxicity. Specific Developmental Abnormalities- Musculoskeletal system. Rat TCLo (Inhalation), 500ppm/7 Hours, female, 15 Days prior to mating and 1-16 Days of pregnancy. Toxic Effects: Effects on Fertility- Pre-implantation mortality. Effects on Fertility- Litter size. Effects on Fertility- Other measures of fertility. Rat TDLo (Intraperitoneal), 1860mg/kg, male, 6 Weeks prior to mating. Toxic Effects: Paternal Effects- Spermatogenesis. Paternal Effects- Testes, epididymis, sperm duct. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Readily absorbed through skin. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	1,2-Propylene oxide's production and its use as a chemical intermediate in polymer synthesis and as a food additive (fumigant), may result in its release to the environment through various waste streams. If released to air, a vapor pressure of 538 mm Hg at 25 deg C indicates 1,2-propylene oxide will exist solely as a vapor in the ambient atmosphere. Vapor-phase 1,2-propylene oxide will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 30 days. If released to soil, 1,2-propylene oxide is expected to have very high mobility based upon an estimated Koc of 25. Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 6.96X10-5 atm-cu m/mole. 1,2-Propylene oxide may volatilize from dry soil surfaces based upon its vapor pressure. 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, suggesting biodegradation will be an important fate process. If released into water, 1,2-propylene oxide is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 12 hours and 6 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Propylene oxide will hydrolyze at half-life rates of 11.6 days (at pH's 7-9) and 6.6 days (at pH 5) at 25 deg C. The presence of chloride ion accelerates the degradation in water and the chemical degradation half-lives in seawater are estimated to be 4.1 days (at pH's 7-9) and 1.5 days (at pH 5) at 25 deg C. Reaction of propylene oxide with Cl ion in water yields approximately 90% 1-chloro-2-propanol and 10% 2-chloro-1-propanol as products under neutral pH conditions. Occupational exposure to 1,2-propylene oxide may occur through inhalation and dermal contact with this compound at workplaces where 1,2-propylene oxide is produced or used. Propylene oxide has been detected in 6.2% of 1,159 consumer products that are used indoors; products found to containing the highest concentration of propylene oxide were automotive and paint products.

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Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification	CLASS 3: Flammable liquid.
PIN Number	UN1280
Proper Shipping Name	Propylene oxide
Packing Group (PG)	I
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list. This product is subject to SARA Section 313 reporting requirements.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid.
EINECS Number (EEC)	200-879-2
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

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Notice to Reader