Material Safety Data Sheet
Propylene oxide, p.a.

ACC# 01360

Section 1 - Chemical Product and Company Identification

MSDS Name: Propylene oxide, p.a.
Catalog Numbers: AC220160000, AC220160010, AC220160050
Synonyms: Propane, 1,2-epoxy-; 1,2-Ethoxypropane; 1,2-Propylene oxide; Methyl ethylene oxide; Methyloxirane, 1,2-epoxypropane
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
75-56-9	Propylene oxide	100	200-879-2

Hazard Symbols: T F+
Risk Phrases: 12 20/21/22 36/37/38 45 46

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: -37 deg C. **Danger! Extremely flammable liquid.** May cause reproductive and fetal effects. Potential cancer hazard. Causes severe eye and skin irritation with possible burns. Harmful if swallowed. May be harmful if absorbed through the skin. May cause allergic skin reaction. Causes respiratory tract irritation.
Target Organs: Central nervous system, respiratory system, eyes, skin.

Potential Health Effects

Eye: Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury.
Skin: May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Causes severe skin irritation and possible burns. May lead to the formation of blisters.
Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Aspiration may cause respiratory swelling and pneumonitis. Vapors may cause dizziness or suffocation.
Chronic: Prolonged inhalation may cause respiratory tract inflammation and lung damage. Prolonged or repeated skin contact may cause dermatitis. May cause cancer according to animal studies. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Persons with kidney disease, chronic respiratory disease, liver disease, or skin disease may be at increased risk from exposure to this substance. Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Extremely flammable. Material will readily ignite at room temperature. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Liquid will float and may reignite on the surface of water. May polymerize explosively when involved in a fire.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.
Flash Point: -37 deg C (-34.60 deg F)

Autoignition Temperature: 449 deg C (840.20 deg F)
Explosion Limits, Lower:2.3 vol %
Upper: 36.0 vol %
NFPA Rating: (estimated) Health: 3; Flammability: 4; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Ground and bond containers when transferring material. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not get on skin or in eyes. Do not ingest or inhale. Prevent build up of vapors to explosive concentration. This product may be under pressure; cool before opening. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Propylene oxide	2 ppm TWA	400 ppm IDLH	100 ppm TWA; 240 mg/m3 TWA

OSHA Vacated PELs: Propylene oxide: 20 ppm TWA; 50 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: alcohol-like - ethereal odor
pH: 7
Vapor Pressure: 400 mm Hg @ 17.8 deg C
Vapor Density: 2.0 (Air=1)
Evaporation Rate: Not available.
Viscosity: 0.28 cP @ 25 deg C
Boiling Point: 35 deg C
Freezing/Melting Point:-112 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density:0.8304 @ 20/20°C
Molecular Formula:C3H6O
Molecular Weight:58.0414

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. May polymerize.
Conditions to Avoid: High temperatures, incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials: Oxidizing agents, strong acids, copper, copper alloys, iron, nitric acid, peroxides, sodium hydroxide, sulfuric acid, oxygen, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), chlorosulfonic acid, oleum, hydrochloric acid, hydrofluoric acid, alkalis, ammonium hydroxide, aluminum chloride, epoxy resin, ethylene oxide + polyhydric alcohol, anhydrous metal chloride.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Will occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 75-56-9: TZ2975000
LD50/LC50:
CAS# 75-56-9:
Draize test, rabbit, eye: 20 mg Severe;
Draize test, rabbit, eye: 20 mg/24H Moderate;
Draize test, rabbit, skin: 50 mg/6M Severe;
Inhalation, mouse: LC50 = 1740 ppm/4H;
Inhalation, rat: LC50 = 4000 ppm/4H;
Oral, mouse: LD50 = 440 mg/kg;
Oral, rat: LD50 = 380 mg/kg;
Skin, rabbit: LD50 = 1500 uL/kg;

Carcinogenicity:
CAS# 75-56-9:
ACGIH: A3 - Animal Carcinogen
California: carcinogen; initial date 10/1/88
NIOSH: potential occupational carcinogen
NTP: Suspect carcinogen
OSHA: Possible Select carcinogen
IARC: Group 2B carcinogen
Epidemiology: Oral, rat: TDLo = 10798 mg/kg/2Y-I (Tumorigenic - Carcinogen ic by RTECS criteria - Gastrointestinal - tumors.; Inhal ation, mouse: TCLo = 400 ppm/6H/2Y-I (Tumorigenic - Carcin ogenic by RTECS criteria - Sense Organs and Special Sens es (Olfaction) - tumors).; Subcutaneous, mouse : TDLo = 272 mg/kg/95W-I (Tumorigenic - Carcinogen ic by RTECS criteria - Blood - lymphoma, including Hodgkin's disease and tumors at site of application).
Teratogenicity: Inhalation, rat: TCLo = 500 ppm/7H (female 7-16 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) and Specific Developmental Abnormalities - musculoskeletal system.; Inhalation, rat: TCLo = 500 ppm/7H (female 1-16 day(s) after conception) Specific Developmental Abnormalities - craniofacial (including nose and tongue).;
Reproductive Effects: Inhalation, rat: TCLo = 500 ppm/7H (female 15 day(s) pre-matingand female 1-16 day(s) after conception) Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea) and Fertility - litter size (e.g. # fetuses per litter; measured before birth). Reproductive - Fertility - other measures of fertility
Neurotoxicity: No information available.
Mutagenicity: Cytogenetic Analysis: Human, Lymphocyte = 1850 ug/L.; Sister Chromatid Exchange: Human, Lymphocyte = 25000 ppm.
Other Studies: Standard Draize Test: Administration into the eye (rabbit) = 20 mg/24H (Moderate). Standard Draize Test: Administ ration into the eye (rabbit) = 20 mg (Severe). Standard Drai ze Test: Administration onto the skin = 50 mg/6 min (Sever e).

Section 12 - Ecological Information

Ecotoxicity: Fish: Goldfish: LC50 = 170 mg/L; 24 Hr; Unspecified Bluegill/Sunfish: TLm = 215 mg/L; 96 Hr; Static bioassay @ 24°C If released to soil, propylene oxide is expected to be susceptible to leaching and chemical hydrolysis in moist soils. It is expected to evaporate relatively rapidly from dry soil surfaces; evaporation from wet soils may also occur, but at a rate diminished by leaching. If released to water, propylene oxide will hydrolyze. Volatilization of propylene oxide from the aquatic environment may be an important transport mechanism.
Environmental: If released to the atmosphere, propylene oxide will react in the vapor phase with photochemically produced hydroxyl radicals with an estimated half-life of approximately 30 days. Atmospheric removal by rainfall may occur. Adsorption to sediment, bioconcentration in aquatic organisms and reaction with photochemically produced hydroxyl radicals in water are not expected to be environmentally important fate processes.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	PROPYLENE OXIDE				No information available.
Hazard Class:	3				
UN Number:	UN1280				
Packing Group:	I				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 75-56-9 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 75-56-9: Effective Date: 10/4/82; Sunset Date: 10/4/92
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 75-56-9: 100 lb final RQ; 45.4 kg final RQ
SARA Section 302 Extremely Hazardous Substances
CAS# 75-56-9: 10,000 lb TPQ
SARA Codes
CAS # 75-56-9: acute, chronic, flammable, reactive.
Section 313
This material contains Propylene oxide (CAS# 75-56-9, 100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 75-56-9 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 75-56-9 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 75-56-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains Propylene oxide, a chemical known to the state of California to cause cancer. California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
T F+
Risk Phrases:
R 12 Extremely flammable.
R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 45 May cause cancer.
R 46 May cause heritable genetic damage.

Safety Phrases:
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)
CAS# 75-56-9: 2
Canada - DSL/NDSL
CAS# 75-56-9 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of B2, D1B, D2A.
Canadian Ingredient Disclosure List
CAS# 75-56-9 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 75-56-9: OEL-AUSTRALIA:TWA 20 ppm (50 mg/m3);Carcinogen OEL-BELGIUM:TWA 20 ppm (48 mg/m3) OEL-DENMARK:TWA 5 ppm (12 mg/m3);Skin;Carcinogen OEL-FINLAND:TWA 5 ppm (12 mg/m3);Carcinogen OEL-FRANCE:TWA 20 ppm (50 mg/m3) OEL-GERMANY;Carcinogen OEL-THE NETHERLANDS:TWA 100 ppm (240 mg/m3) OEL-THE PHILIPPINES:TWA 100 ppm (240 mg/m3) OEL-RUSSIA:STEL 1 mg/m3;Skin OEL-SWEDEN:TWA 5 ppm (12 mg/m3);STEL 10 ppm (25 mg/m3) OEL-SWITZERLAND:TWA 2.5 ppm (6 mg/m3);Carcinogen OEL-TURKEY:TWA 100 ppm (240 mg/m3) OEL-UNITED KINGDOM:TWA 20 ppm (50 mg/m3);STEL 100 ppm OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 7/01/1999
Revision #3 Date: 7/23/2002