



Material Safety Data Sheet

LA0876
Ethylene Glycol 50/50

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA0876

Product Name: Ethylene Glycol 50/50

Synonyms: None

Chemical Family: Glycols

Application: Used as antifreeze, heat transfer fluid, solvent, and raw material in polyester fiber manufacturing.

Distributed By:

Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.

Preparation date of MSDS: 27/May/2010

Telephone number of preparer: 1-866-686-4827

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Ethylene Glycol 107-21-1	30-60	Oral LD50 Rat = 4000 mg/kg Dermal LD50 Rabbit = 9530 µL/kg
Water 7732-18-5	Balance	Oral LD50 (Rat) >90 mL/kg

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:

Eye Contact: May cause slight eye irritation. Corneal injury is unlikely. Vapors or mists may cause eye irritation.

Skin Contact: Brief contact is essentially non-irritating to skin. Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin irritation with local redness. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or if material sufficiently hot to burn skin may result in absorption of potential lethal amounts.

Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

3. HAZARDS IDENTIFICATION

Ingestion: May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure, pulmonary edema, and severe kidney damage may develop. May be fatal if swallowed.

4. FIRST AID MEASURES

Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention immediately.

Skin Contact: Remove contaminated clothing and launder before reuse. Wash with soap and water. Get medical attention if irritation persists.

Inhalation: Move person to fresh air. If irritation persists, seek medical attention.

Ingestion: If swallowed, do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical help immediately.

Notes to Physician: It is estimated that the oral dose to adults is of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glyceraldehydes, glycolic acid and oxalic acid which cause an elevated anion-gap metabolic acidosis and renal tubular injury. The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, CNS depression and kidney injury. Urinalysis may show albuminuria, hematuria and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of ethylene glycol poisoning includes elimination of ethylene glycol and metabolites, correction of metabolic acidosis and prevention of kidney injury. It is essential to have immediate and follow up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continuous infusion of 5% sodium bicarbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase, ethanol is antidotal. Given in the early stages of intoxication, it blocks the formulation of nephrotoxic metabolites. A therapeutically effective blood concentration of ethanol is in the range 100 - 150 mg/dl and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and /or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood ethylene glycol concentration greater than 25 mg/dl, or compromise of renal functions.

A more effective intravenous antidote for physician use is 4-methylpyrazole, a potent inhibitor of alcohol dehydrogenases which effectively blocks the formation of toxic metabolites of ethylene glycol. It has been used to decrease the metabolic consequences of ethylene glycol poisoning before metabolic acidosis coma, seizures and renal failure have occurred. A generally recommended protocol is a loading dose of 15 mg/kg followed by 10 mg/kg every 12 hours for 4 doses and the 15 mg/kg every 12 hours until the ethylene glycol concentrations are below 20 mg/100ml. Slow intravenous infusion is required. Since 4-methylpyrazole is dialyzable, increased dosage may be necessary during hemodialysis. Additional therapeutic measures may include the administration of cofactors involved in the metabolism of ethylene glycol. Thiamine (100 mg) and pyridoxine (50 mg) should be given every six hours.

Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be non-cardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing, and dysphagia.

5. FIRE FIGHTING MEASURES

Flash Point: 116.1 °C / 241 °F

Flash Point Method: Tag Closed Cup

Autoignition Temperature: 427°C /801°F

Flammable Limits in Air (%): Lower: 3.2% Upper: 15.3%

Extinguishing Media: Use DRY chemicals, CO₂, alcohol foam or water spray.

Special Exposure Hazards: Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use water spray to cool fire-exposed containers and structures. Container may rupture from gas generation in a fire situation. During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Carbon monoxide, carbon dioxide, and other oxides may be generated as products of combustion.

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5. FIRE FIGHTING MEASURES

Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon.

Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.

NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 1, INSTABILITY 0

HMS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 1, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Wear appropriate protective equipment.

Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.

Procedure for Clean Up: For small spills, collect with non-combustible absorbent. For large spills, remove by mechanical means and place in appropriate containers for disposal.

7. HANDLING AND STORAGE

Handling: Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing mist or vapor. Use good personal hygiene. Use with adequate ventilation. Keep the containers closed when not in use. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperature possibly resulting in spontaneous combustion.

Storage: Keep containers tightly closed. Keep in a cool, well-ventilated place. Avoid storage with incompatible materials. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

General (mechanical) room ventilation is expected to be satisfactory. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit.

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection is needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator.

Gloves:

Polyvinylchloride (PVC) gloves.

Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Eyes: Safety glasses with side shields or chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Ethylene Glycol	100 mg/m ³ Ceiling	50 ppm Ceiling 125 mg/m ³ Ceiling	Not Available.
Water	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.

Color: Colorless

Odor: Sweet

pH 9

Specific Gravity: 1.0549

Boiling Point: >197°C />387°F

Freezing/Melting Point: -13°C / 9°F

Vapor Pressure: 0.06 mmHg @ 20°C

Vapor Density: 2.1

% Volatile by Volume: Not Available.

Evaporation Rate: 0.01

9. PHYSICAL AND CHEMICAL PROPERTIES

Solubility: 100%

VOCs: Not Available.

Viscosity: Not Available.

Molecular Weight: 62 g/mol

Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources. Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Materials to Avoid: Strong acids and bases. Strong oxidizers.

Hazardous Decomposition Products: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers.

Additional Information:

Avoid contamination with strong oxidizing agents and materials reactive with hydroxyl compounds.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure, pulmonary edema, and severe kidney damage may develop. May be fatal if swallowed.

Skin Contact: Brief contact is essentially non-irritating to skin. Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin irritation with local redness. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or if material sufficiently hot to burn skin may result in absorption of potential lethal amounts.

Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

Eye Contact: May cause slight eye irritation. Corneal injury is unlikely. Vapors or mists may cause eye irritation.

Additional Information: Repeated skin contact with ethylene glycol may, in a very small proportion of cases, cause sensitization with the development of allergic contact dermatitis. The incidence is significantly less than 1% with the undiluted material. Repeated inhalation of ethylene glycol may produce signs of central nervous system involvement, particularly dizziness and nystagmus (involuntary eye movement). Exposure may place individuals with existing heart problems at added risk of potential cardiac irregularities and heart failure. In animals, effects have been reported on the following organs: Kidney, liver.

Acute Test of Product:

Acute Oral LD50: Not Available.

Acute Dermal LD50: Not Available.

Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Ethylene Glycol	Not listed.	A4
Water	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or doses. The no-effect doses for developmental toxicity for ethylene glycol given by gavage over the period of organogenesis has been shown to be 150 mg/kg/day for the mouse and 500 mg/kg/day for the rat. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations of 150, 1000 and 2500 mg/m³ for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentration, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing of ethylene glycol as a result of grooming the wetted coat. In a further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1000 and 2500 mg/m³) and developmental toxicity with minimal evidence of teratogenicity (2500 mg/m³). The no-effects concentration (based on maternal toxicity) was 500 mg/m³. In a further study in mice, no teratogenic effects could be produced when ethylene glycol was applied to the skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen. There is currently no available information to suggest that ethylene glycol has caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity. Exposure to high aerosol concentrations is only minimally effective in producing developmental toxicity. Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals. Specifically, growth retardation and decreased litter size in rats and mice and decreased mating frequency in mice were observed.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Ethylene Glycol	14 - 18 mL/L LC50 (Oncorhynchus mykiss) 96 h static 40000 - 60000 mg/L LC50 (Pimephales promelas) 96 h static 16000 mg/L LC50 (Poecilia reticulata) 96 h static 27540 mg/L LC50 (Lepomis macrochirus) 96 h static 40761 mg/L LC50 (Oncorhynchus mykiss) 96 h static 41000 mg/L LC50 (Oncorhynchus mykiss) 96 h	Not Available.	6500 - 13000 mg/L EC50 Pseudokirchneriella subcapitata 96 h
Water	Not Available.	Not Available.	Not Available.

Other Information:

Material is practically non-toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

Contaminated Packaging: Waste materials must be disposed of in accordance with your municipal, state, provincial and federal regulations.

14. TRANSPORT INFORMATION

DOT (U.S.):

DOT Shipping Name: Not Regulated.

DOT Hazardous Class: Not Applicable.

DOT UN Number: Not Applicable.

DOT Packing Group: Not Applicable.

14. TRANSPORT INFORMATION

DOT Reportable Quantity (lbs): Not Available.

Note: No additional remark.

Marine Pollutant: No.

TDG (Canada):

TDG Shipping Name: Not Regulated.

Hazard Class: Not Applicable.

UN Number: Not Applicable.

Packing Group: Not Applicable.

Note: No additional remark.

Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Ethylene Glycol	Not Listed.	Listed	Listed
Water	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.

MA Right to Know List: Listed.

New Jersey Right-to-Know List: Listed.

Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:

D2A VERY TOXIC MATERIALS



16. OTHER INFORMATION

Additional Information:

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Disclaimer:

NOTICE TO READER:

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Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

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*****END OF MSDS*****