

Material Safety Data Sheet

Mono Ethylene glycol

Section 1 - Chemical Product

MSDS Name: Ethylene glycol

Synonyms: 1,2-Dihydroxyethane; 1,2-Ethanediol; Ethylene alcohol; Glycol.

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
107-21-1	Ethylene glycol	>95	203-473-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: viscous liquid.

Warning! Causes eye irritation. May be harmful if swallowed. May cause kidney damage. May cause central nervous system effects. Hygroscopic (absorbs moisture from the air).

Target Organs: Kidneys, central nervous system, respiratory system, eyes.

Potential Health Effects

Eye: May cause moderate eye irritation.

Skin: Low hazard for usual industrial handling. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts.

Ingestion: The lethal dose in adult humans for ethylene glycol is about 100 ml (1/3 cup). Swallowing may cause nausea, vomiting or diarrhea. Excessive exposure may cause CNS effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. Toxicity follows 3-stage progression. (1) involves central nervous system effects including paralysis of eye muscles, convulsions, and coma. Metabolic acidosis and cerebral swelling may also occur. (2) involves cardiopulmonary system with symptoms of hypertension, rapid heart beat, and possible cardiac failure. (3) involves severe kidney abnormalities including possible renal failure.

Inhalation: If ethylene glycol is heated or misted in work areas that are poorly

ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea. Material has a very low vapor pressure at room temperature, so inhalation exposures are not expected unless material is heated or misted.

Chronic: May cause kidney injury. Repeated excessive exposure to ethylene glycol may cause irritation of the upper respiratory tract. In humans, effects have been reported on the central nervous system, including nystagmus (involuntary, rapid, rhythmic movement of the eyeball).

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire.

Flash Point: 111 deg C (231.80 deg F)

Autoignition Temperature: 398 deg C (748.40 deg F)

Explosion Limits, Lower: 3.20 vol %

Upper: 15.30 vol %

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 0

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.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid breathing spray or mist.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: 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
Ethylene glycol	100 mg/m ³ Ceiling (aerosol only)	none listed	none listed

OSHA Vacated PELs: Ethylene glycol: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Glove protection is not normally required.

Clothing: Protective garments not normally required.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless - syrupy - viscous

Odor: sweetish odor

pH: Not available.

Vapor Pressure: 0.05 mm Hg @ 20 deg C

Vapor Density: 2.14 (air=1)

Evaporation Rate: Not available.

Viscosity: 21cP @ 20 deg C

Boiling Point: 197 deg C @ 760 mmHg

Freezing/Melting Point: -13 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 1.113 g/ml

Molecular Formula: C₂H₆O₂

Molecular Weight: 62.06

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Hygroscopic: absorbs moisture or water from the air.

Conditions to Avoid: Moisture, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, isocyanates, aliphatic amines, caustics.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 107-21-1: KW2975000

LD50/LC50:

CAS# 107-21-1:

Draize test, rabbit, eye: 500 mg/24H Mild;

Draize test, rabbit, eye: 100 mg/1H Mild;

Draize test, rabbit, eye: 0.012 ppm/3D;

Draize test, rabbit, eye: 1440 mg/6H Moderate;

Oral, mouse: LD50 = 5500 mg/kg;

Oral, rat: LD50 = 4700 mg/kg;

Skin, rabbit: LD50 = 9530 uL/kg;

Ethylene glycol is more acutely toxic for humans than for laboratory animals by ingestion. The single oral lethal dose for humans has been estimated at 1.4 ml/kg (1.56 g/kg) or about 100 ml (111 g) for an adult.

Carcinogenicity:

CAS# 107-21-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.

Teratogenicity: An expert panel convened by the NTP's Center for the Evaluation of Risks to Human Reproduction concluded 2/13/03 that developmental and reproductive risks stemming from exposure to the chemicals propylene glycol and ethylene glycol are negligible.

Reproductive Effects: No data available.

Mutagenicity: No data available.

Neurotoxicity: No data available.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 41000 mg/L; 96 Hr.; Unspecified
 Fish: Bluegill/Sunfish: LC50 = 27500-41000 mg/L; 96 Hr.; Unspecified
 Fish: Goldfish: LC50 = 27500-41000 mg/L; 96 Hr.; Unspecified
 Water flea *Phytobacterium phosphoreum*: LC50 = 46300 mg/L; 48 Hr.; Unspecified

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	Canada TDG
Shipping Name:	Not regulated	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 107-21-1 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

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.

CERCLA Hazardous Substances and corresponding RQs

CAS# 107-21-1: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 107-21-1: immediate, delayed.

Section 313

This material contains Ethylene glycol (CAS# 107-21-1, >95%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 107-21-1 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:

None of the chemicals in this product are listed as Hazardous Substances 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# 107-21-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

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:**

XN

Risk Phrases:

R 22 Harmful if swallowed.

Safety Phrases:**WGK (Water Danger/Protection)**

CAS# 107-21-1: 0

Canada - DSL/NDSL

CAS# 107-21-1 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 107-21-1 is listed on the Canadian Ingredient Disclosure List.