

SAFETY DATA SHEET



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ETHYLENE GLYCOL

SDS No. M0097

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ethylene Glycol

Synonyms: 1, 2-Ethanediol; Glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethylene Dihydrate

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:

Acute Toxicity, Oral: GHS Category 4

Eye Irritation: GHS Category 2B

Label Elements

Signal Word: WARNING!

Hazard Statements:

H302 – Harmful if swallowed.

H320 – Causes eye irritation.

H333 – May be harmful if inhaled.

Precautionary Statements:

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

May cause irritation to the eyes. May be harmful if swallowed. May cause kidney damage and central nervous system effects. Hygroscopic. Target Organs: Kidneys, central nervous system, respiratory system, and eyes.

HMIS Rating:

Health – 1 Flammability – 1 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

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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>
Ethylene Glycol	107-21-1	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Ingestion: Do not induce vomiting unless directed to by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward. Get medical aid immediately.

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation persists.

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

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Not expected to be a fire hazard.

Auto-ignition Temperature: 398° C (748° F)

Flash Point: 111° C (231° F)

Flammable Limits: Lower Limit – 3.2 vol %, Upper Limit – 15.3 vol %

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

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. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

Specific Explosion Hazards: No information available.

Fire Fighting Media: Use water, dry chemical, chemical foam, or alcohol-resistant foam. Water or foam may cause frothing. Use agent most appropriate to extinguish fire.

National Fire Protective Association: Health - 1, Flammability - 1, 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. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. 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. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Ground or bond containers before transferring material. Empty containers contain product residue (liquid and vapor) and can be dangerous. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Store away from ignition sources. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. 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 other 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: None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless, syrupy, viscous liquid.

Odor: Sweetish odor

Molecular Formula: HOCH₂CH₂OH

Molecular Weight: 62.07

Auto-ignition Temperature: 398° C (748° F)

Flash Point: 111° C (231° F)

Flammable Limits: Lower Limit – 3.2 vol %, Upper Limit – 15.3 vol %

pH: 6.5 – 7.5

Boiling Point: 195.8° C @ 760 mm Hg

Freezing/Melting Point: -13° C

Decomposition Temperature: Not available.

Specific Gravity: 1.113 g/cm³

Vapor Density (Air=1): 2.2

Vapor Pressure: 0.05 mm Hg @ 25° C.

Evaporation Rate (Butyl acetate = 1): <1

Viscosity: 21 cP @ 20° C.

Solubility: Miscible/Soluble

Conductivity: Conductive; Conductivity = 1.16×10^8 pS/m; Dielectric Constant = 37.7; Relaxation Time Constant = 2.9×10^{-6} seconds

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed container under normal handling and storage conditions. Hygroscopic.

Conditions to Avoid: Excess heat, exposure to moist air or water.

Incompatibility With Various Substances: Strong oxidizers, strong acids, isocyanates, aliphatic amines, caustics..

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Material has a very low vapor pressure at room temperature, so inhalation exposures are not expected unless material is heated or misted. May cause respiratory tract irritation. Heated or misted material may cause headache, headache, irregular eye movements, and possible coma.

INGESTION HAZARD: The lethal dose in adult humans is about 100 ml (1/3 cup). Swallowing may cause nausea, vomiting, or diarrhea. Excessive exposure may have central nervous system effects, metabolic acidosis, and kidney

failure. Toxicity follows a three stage progression. Stage 1 involves central nervous system effects including paralysis of eye muscles, convulsions, and coma. Metabolic acidosis and cerebral swelling may occur. Stage 2 involves cardiopulmonary symptoms of hypertension, rapid heart beat, and possible cardiac failure. Stage 3 involves severe kidney abnormalities including possible renal failure.

SKIN CONTACT HAZARD: Considered a low hazard for normal industrial use. A single prolonged exposure is not likely to result in material being absorbed in dangerous amounts.

EYE CONTACT HAZARD: May cause moderate eye irritation.

Chronic Exposure Hazards: May cause kidney injury. Repeated excessive exposure may cause irritation of the upper respiratory tract. In humans, effects have been reported on the central nervous system to include involuntary, rapid, rhythmic movement of the eyeball.

Animal Toxicity:

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

Oral, rat: LD50 = 4700 mg/kg;

Oral, rat: LD50 = 7712 mg/kg;

Skin, rabbit: LD50 = 10,636 mg/kg;

Skin, mouse: LD50 = >3500 mg/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: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

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

Reproductive Effects: Adverse effects have been observed in animals.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Goldfish: LC50 = 27,500-41,000 mg/L, 96H, unspecified;

Fish: Rainbow trout: LC50 = 41,000 mg/L, 96H, unspecified;

Fish: bluegill/sunfish: LC50 = 27,500-41,000 mg/L, 96H, unspecified;

Phylobacterium phosphoreum: LC50 = 45,3000 mg/L, 48H, unspecified;

Environmental Fate: No information available.

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, IATA, IMO

Not regulated for packages sizes shipped in quantities less than the product's RQ of 5,015 lb./2276.8 kg (540.41 gal./2,045.7 liters)

US DOT, IATA, IMO

Not regulated

US DOT, IATA, IMO

Not regulated

15. REGULATORY INFORMATIONUS Federal Regulations:

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

Health and Safety Reporting List: Not listed.

Chemical Test Rules: Not listed.

Section 12b: Not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 107-21-1: 5000 lb (2270 kg) RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 107-21-1 – immediate, delayed

Section 313: Ethylene Glycol (107-21-1) is subject to SARA Title III Section 313 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 107-21-1 is listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 107-21-1 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 107-21-1 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDSL: CAS# 107-21-1 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 107-21-1 is listed on Canada's Ingredient Disclosure list.

DSCL (EEC):

Hazard Symbols: Xn

Risk Phrases: R22 – harmful if swallowed; R36 – Irritating to eyes.

Safety Phrases: S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.;

S36/37/39 - Wear suitable protective clothing, gloves, and eye/face protection; S45 -In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible); S53 - Avoid exposure - obtain special instructions before use..

WGK (Water Danger/protection): CAS# 107-21-1: 0

16. OTHER INFORMATION

Originally Prepared: 6/30/2006

Last Revised: 3/27/2014 – Information on physical characteristics in Section 10, animal toxicology in Section 11, and DOT transportation in Section 14 was updated.

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