



Material Safety Data Sheet

12601 Twinbrook Parkway,
Rockville, MD 20852 USA

Phone Calls: 301-816-8129
8 a.m. to 5 p.m. EST Mon. - Fri.

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ETHYLENE GLYCOL

Catalog Number: 1265515

Revision Date:

November 30, 2007

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Common Name: Ethylene Glycol

Manufacturer: U. S. Pharmacopeia

Responsible Party: Reference Standards Technical Services

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Product Use: USP Reference Standards and Authentic Substances are used for chemical tests and assays in analytical, clinical, pharmaceutical, and research laboratories.

SECTION 2 - HAZARD INFORMATION

EMERGENCY OVERVIEW - Irritant. Combustible.

Adverse Effects: Adverse effects may include nausea, vomiting, headache, dizziness, tiredness, and red or raised skin. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: Overdose effects may include unconsciousness, abdominal pain, weakness, stupor, convulsions, and death.

Acute: Eye, skin, gastrointestinal and/or respiratory tract irritation.

Chronic: Possible hypersensitization.

Medical Conditions Aggravated by Exposure: Hypersensitivity to material.

Cross Sensitivity: n/f

Target Organs: Respiratory system, skin, eyes, central nervous system

For additional information on toxicity, see Section 11.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: Ethylene Glycol

Formula: C₂H₆O₂

Synonym: Glycol alcohol

Chemical Name: 1,2-Dihydroxyethane

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CAS: 107-21-1

RTECS Number: KW2975000

Chemical Family: Dihydroxy alcohol

Therapeutic Category: n/f

Composition: Pure Material

SECTION 4 - FIRST AID MEASURES

Inhalation: May cause irritation. Remove to fresh air.

Eye: Causes irritation. Avoid contact. Flush with copious quantities of water for at least 15 minutes.

Skin: Causes irritation. Avoid contact. Flush with copious quantities of soap and water.

Ingestion: May cause irritation and sweet taste. Flush out mouth with water. This material is absorbed from the gastrointestinal tract.

General First Aid Procedures: Remove from exposure. Remove contaminated clothing. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention. If person is not breathing give artificial respiration. If breathing is difficult give oxygen. Obtain medical attention.

Note to Physicians

Overdose Treatment: Treatment of overdose should be symptomatic and supportive and may include the following:

1. Do NOT induce vomiting. Perform gastric lavage soon after ingestion (within one hour). Gastric aspiration with a nasogastric tube may be useful soon after ingestion. Gastric aspiration may be preferable to gastric lavage. Protect airway by placement in Trendelenburg and left lateral decubitus position or by endotracheal intubation. Neither gastric lavage or gastric aspiration should be performed on an actively seizing patient.
2. Administer activated charcoal as a slurry.
3. For seizures, administer intravenous diazepam or lorazepam. If seizures recur, consider phenobarbital or propofol. Monitor for hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation. Evaluate for hypoglycemia, electrolyte disturbances, and hypoxia.
4. Monitor arterial pH closely in patients who are acidotic or otherwise symptomatic.
5. For severe acidosis and acidemia prior to hemodialysis, administer sodium bicarbonate. Sodium bicarbonate should NOT be routinely administered, and should NOT be administered for mild to moderate acidosis or acidemia.
6. Administer fomepizole for ethylene glycol poisoning. Administer oral or intravenous ethanol when fomepizole is not available.
7. Administer thiamine and pyridoxine.
8. For hypocalcemia, treat with calcium gluconate.
9. Hemodialysis or peritoneal dialysis may be of value. [Meditext 2007 and Martindale 2007]

SECTION 5 - FIREFIGHTING MEASURES

Extinguisher Media: Water spray, dry chemical, carbon dioxide or foam as appropriate for surrounding fire and materials.

Fire and Explosion Hazards: This material is combustible.

Firefighting Procedures: As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill Response: Wear approved respiratory protection, chemically compatible gloves and protective clothing. Eliminate all ignition sources. Absorb and/or contain spill with inert materials like sand or vermiculite. Avoid breathing vapor. Place spillage in appropriately-labelled container for disposal. Ventilate and wash spill site.

SECTION 7 - HANDLING AND STORAGE

Handling: As a general rule, when handling USP Reference Standards avoid all contact and inhalation of dust, mists, and/or vapors

associated with the material. Wash thoroughly after handling.

Storage: Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering Controls: Engineering controls such as exhaust ventilation are recommended.

Respiratory Protection: Use a NIOSH-approved respirator, if it is determined to be necessary by an industrial hygiene survey involving air monitoring.

Gloves: Chemically compatible

Eye Protection: Safety glasses or goggles

Protective Clothing: Protect exposed skin.

Exposure Limits: NIOSH: CEILING 50 ppm
ACGIH: CEILING 100 mg/m³ (aerosol)
German MAK: 10 ppm

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Properties as indicated on the MSDS are general and not necessarily specific to the USP Reference Standard Lot provided.

Appearance and Odor: Clear, colorless, syrupy, hygroscopic liquid; odorless

Odor Threshold: n/f

pH: n/f

Melting Range: -11 to -12° C

Boiling Point: 194 - 200° C

Flash Point: 111.1° C (CC); 115° C (CC)

Autoignition Temperature: 398° C

Evaporation Rate: n/f

Upper Flammability Limit: 15.3%

Lower Flammability Limit: 3.2%

Vapor Pressure: 0.1 hPa at 20° C

Vapor Density: 2.14 (air=1)

Specific Gravity: 1.113 at 20° C

Solubility in Water: Miscible

Fat Solubility: Practically insoluble in oils

Other Solubility: Miscible with alcohol, with glycerol, with acetic acid, with acetone and similar ketones, with aldehydes, and with pyridine; slightly soluble in ether; practically insoluble in benzene, in chlorinated hydrocarbons, and in petroleum ether

Partition Coefficient: n-octanol/water: -1.36

Percent Volatile: n/f

Reactivity in Water: n/f

Explosive Properties: n/f

Oxidizing Properties: n/f

Formula: C₂H₆O₂

Molecular Weight: 62.07

SECTION 10 - STABILITY AND REACTIVITY

Conditions to Avoid: Avoid exposure to moisture, heat, and ignition sources.

Incompatibilities: Strong oxidizing agents, strong acids, caustics, aliphatic amines, isocyanates, chlorosulfonic acid, oleum

Decomposition Products: n/f

Stable? Yes **Hazardous Polymerization?** No

SECTION 11 - TOXICOLOGICAL PROPERTIES

Oral Rat: LD50: 4700 mg/kg

Oral Mouse: LD50: 5500 mg/kg

Other Toxicity Data: Skin Rabbit LD50: 9530 microliters/kg

Irritancy Data: Rabbit/eye (500 mg/42hr): mild, (100mg/1hr): mild, (1440mg/6hr): moderate
Rabbit/skin (555 mg): mild

Corrosivity: n/f

Sensitization Data: Human Patch-Test: non-sensitizing

Listed as a Carcinogen by: **NTP:** No **IARC:** No **OSHA:** No

Other Carcinogenicity Data: In a 2-year study in mice administered ethylene glycol in diet at doses approximately up to 6000 mg/kg/day in males and up to 12,000 mg/kg/day in females, there was no evidence of carcinogenicity. In a 2-year study in rats and mice administered ethylene glycol in diet at concentrations resulting in doses up to 1000 mg/kg/day, there was no evidence of carcinogenicity in rats and mice, other than a non-statistically significant increase in time-adjusted lymphosarcoma in high-dose female mice.

Mutagenicity Data: The Agency for Toxic Substances and Disease Registry (ASTDR) concluded that exposure to ethylene glycol poses minimal risk of causing genotoxic effects in humans. ASTDR performed a thorough review of genetic toxicity information where the majority of findings were negative and positive results occurred in an in vivo rat chromosome aberration assay and rat dominant lethal mutation assay where study limitations were present. [NTP CERHR, Jan 2004]

Reproductive and Developmental Effects: No developmental toxicity occurred in rabbits given doses up to 2000 mg/kg. Oral exposure to high doses of ethylene glycol (500 mg/kg/day and higher in mice, 100 mg/kg/day and higher in rats) caused developmental toxicity in mice and rats, including axial skeletal malformations, reduced body weights, external malformations, and increased post implantation loss. Developmental toxicity occurred in these rodents at doses exceeding the saturation of glycolic acid metabolism, which occurs in rats at 500 mg/kg. Ethylene glycol exposures resulting in blood levels below the level of saturation should not result in hazard associated with developmental toxicity in humans. [NTP CERHR, Jan 2004]

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: Rainbow trout LC50: 41000 mg/L (96 hr; 20° C)
Bluegill LC50: 27500 - 41000 mg/ (96 hr)
Goldfish LC50: 27500 - 41000 mg/L (96 hr)
Photobacterium phosphoreum EC50: 620 mg/L (30 min)
Water flea LC50: 46300 mg/L (48 hr)

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal: Dispose of waste in accordance with all applicable Federal, State and local laws.

SECTION 14 - TRANSPORT INFORMATION

ETHYLENE GLYCOL**Catalog Number:** 1265515**Revision Date:**November 30, 2007

Shipping Name: n/f**Class:** n/f**UN Number:** n/f**Packing Group:** n/f**Additional Transport Information:** n/f

SECTION 15 - REGULATORY INFORMATION
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U.S. Regulatory Information: CERCLA/SARA Reportable Quantities: 5000 lb (2270 kg)**International Regulatory Information:** EINECS # 203-473-3

Hazard code: Xn

Risk phrase: R22

SECTION 16 - OTHER INFORMATION

Revision: 30-Nov-07**Previous Revision Date:** 19-Nov-07