Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Ethylene glycol

Manufacturer: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Commercial Name(s): Not available.

Synonym: 1,2-Dihydroxyethane; 1,2-Ethanediol; 1,2-Ethandiol; Ethylene glycol dihydrate; Glycol alcohol; Monoethylene glycol; Tescol

Chemical Name: Ethylene Glycol

Chemical Family: Not available.

Chemical Formula: HOCH2CH2OH

Supplier: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Catalog Number(s): E1051, E1052, E1060, E1314

CAS#: 107-21-1

RETECS: KW2975000

TSCA: TSCA 8(b) inventory: Ethylene glycol

IN CASE OF EMERGENCY
CHEMTREC (24hr) 800-424-9300
CALL (310) 516-8000

Section 2. Composition and Information on Ingredients

Exposure Limits

Name | CAS # | TWA (mg/m³) | STEL (mg/m³) | CEIL. (mg/m³) | % by Weight
--- | --- | --- | --- | --- | ---
1) Ethylene glycol | 107-21-1 | | | 100 | 100

Toxicological Data on Ingredients: Ethylene glycol:

ORAL (LD50): Acute: 4700 mg/kg [Rat]; 5500 mg/kg [Mouse]; 6610 mg/kg [Guinea pig].

VAPOR (LC50): Acute: >200 mg/m³ 4 hours [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects: Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of inhalation. Severe over-exposure can result in death.

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH.

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to kidneys, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name
Mercury

Manufacturer
SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Commercial Name(s)
Not available.

Synonym
Quick Silver; Colloidal Mercury; Metallic Mercury; Liquid Silver; Hydrargyrum

Chemical Name
Mercury

Chemical Family
Metal.

Chemical Formula
Hg

Section 2. Composition and Information on Ingredients

Exposure Limits

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m²)</th>
<th>STEL (mg/m²)</th>
<th>CEIL (mg/m²)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Mercury</td>
<td>7439-97-6</td>
<td>0.025</td>
<td>0.1</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients
Mercury
LD₅₀: Not available.
LC₅₀: Not available.

Section 3. Hazards Identification

Potential Acute Health Effects
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
**Mercury**

**Potential Chronic Health Effects**

Hazardous in case of skin contact (permeator).

**CARCINOGENIC EFFECTS:** Classified A6 (Not suspected for human) by ACGIH. 3 (Not classifiable for human) by IARC.

**MUTAGENIC EFFECTS:** Not available.

**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Not available.

The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).

Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**Section 4. First Aid Measures**

**Eye Contact**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

**Skin Contact**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Serious Inhalation**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion**

Not available.

**Section 5. Fire and Explosion Data**

**Flammability of the Product**

Non-flammable.

**Auto-Ignition Temperature**

Not applicable.

**Flash Points**

Not applicable.

**Flammable Limits**

Not applicable.

**Products of Combustion**

Not available.

**Fire Hazards in Presence of Various Substances**

Not applicable.

**Explosion Hazards in Presence of Various Substances**


**Fire Fighting Media and Instructions**

Not applicable.

**Special Remarks on Fire Hazards**

When thrown into mercury vapor, boron phosphodiode ignites at once. Flame forms with chlorine jet over mercury surface at 200 deg to 300 deg C. Mercury undergoes hazardous reactions in the presence of heat and sparks or ignition.
Mercury

Section 6. Accidental Release Measures

Small Spill
Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions
Keep locked up. Keep container dry. Do not ingest. Do not breathe gas/fumes/vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibilities such as oxidizing agents, metals.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
TWA: 0.025 from ACGIH (TLV) (United States) SKIN
TWA: 0.05 CEIL: 0.1 (mg/m³) from OSHA (PEL) (United States) Inhalation
TWA: 0.025 (mg/m³) (United Kingdom (UK))

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and appearance
Liquid (Heavy liquid)

Molecular Weight
200.59 g/mole

pH (1% soln/water)
Not available.

Boiling Point
356.73°C (674.1°F)

Melting Point
-38.87°C (-38°F)

Critical Temperature
1462°C (2663.6°F)

Specific Gravity
13.55 (Water = 1)

Vapor Pressure
Not available.

Vapor Density
6.93 (Air = 1)

Odor
Odorless.

Taste
Not available.

Color
Silver-white
Mercury

Volutibity Not available.
Odor Threshold Not available.
Water/Oil Dist. Coeff. Not available.
Ionicity (in Water) Not available.
Dispersion Properties Not available.
Solubility Very slightly soluble in cold water.

Section 10. Stability and Reactivity Data

Stability The product is stable.
Instability Temperature Not available.
Conditions of Instability Incompatible materials
Incompatibility with various substances Reactive with oxidizing agents, metals.
Corrosivity Non-corrosive in presence of glass.

Special Remarks on Reactivity Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium.
Incompatible with boron diiodophosphate; ethylene oxide; metal oxides, metals (aluminum, potassium, lithium, sodium, rubidium); methyl azide; methylsilane, oxygen; oxidants (bromine, peroxymonosulfate acid, chloro dioxide, nitric acid, tetracarboxylinickel, nitromethane, silver perchlorate, chlorates, sulfuric acid, nitrates,); tetracarboxylinickel, oxygen, acetylenic compounds, ammonia, ethylene oxide, methylsilane, calcium.

Special Remarks on Corrosivity
The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories.
Special precautions: Mercury can attack copper and copper alloy materials.
Polymerization Will not occur.

Section 11. Toxicological Information

Routes of Entry Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
Toxicity to Animals LD50: Not available.
LC50: Not available.
Chronic Effects on Humans CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by IARC. 3 (Not classifiable for human.) by IARC.
May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).
Other Toxic Effects on Humans Very hazardous in case of skin contact (irritant), of ingestion, of inhalation.
Hazardous in case of skin contact (corrosive, penetrator).
Special Remarks on Toxicity to Animals Not available.
Special Remarks on Chronic Effects on Humans May affect genetic material.
May cause cancer based on animal data.
Passes through the placental barrier in animal.
May cause adverse reproductive effects (paternal effects- spermatogenesis; effects on fertility - fetotoxicity, post-implantation mortality), and birth defects.
Mercury

Acute Potential Health Effects:
Skin: Causes skin irritation. Mercury is a skin irritant and can be corrosive to skin and mucous membranes.
Eyes: Causes eye irritation. Exposure to vapor may cause conjunctivitis, ulceration of the cornea, discoloration of the front surface of the lens, and possible burns.
Inhalation: Inhalation of high concentrations of vapor or mist can cause respiratory tract irritation and chemical burns to the respiratory tract, corrosive bronchitis, interstitial pneumonia, severe pulmonary irritation, lung lesions, and death from respiratory insufficiency. Mercury vapor or mist can be absorbed by the respiratory tract. Acute mercury intoxication is rare, but can occur after inhalation of large amounts. Vapor inhalation is the most likely route of exposure. It may cause flu-like “fume metal fever” with chills, malaise, respiratory symptoms (chest tightness, difficulty breathing, coughing), fever, chills, gastrointestinal symptoms (dry mouth, nausea, vomiting, diarrhea, abdominal pain, hypermotility, stomatitis, salivation, metallic taste), and gingivitis. It may affect behavior/cerebral nervous system/peripheral nervous system (depression, anxiety, decreased strength, muscle aches/weakness, lethargy, fatigue, headache, insomnia, dizziness, clumsiness or muscle incoordination, short-term memory loss, slurred speech, tremor, irritability, emotional instability, apathy, hallucinations, mania, xenophobia, sensitivity, impaired concentration, convulsions), liver, metabolism (anorexia), cardiovascular system (hypertension, tachycardia), urinary system (kidney damage, renal impairment), and blood (increased white blood cell count, thrombocytopenia, anemia). Acute Mercury poisoning can resemble Pheochromocytoma.
Ingestion: May cause gastrointestinal tract irritation. May cause severe and permanent damage to the digestive tract. May cause perforation of the digestive tract. Mercury can be locally corrosive after ingestion, causing pain, burning, whitening of mucous membranes, abdominal pain, bloody vomitus and diarrhea, thirst, salivation, and metallic taste. May affect behavior/cerebral nervous system/peripheral nervous system with symptoms similar to inhalation. May also affect liver, and kidneys.

Chronic Potential Health Effects:
Skin: Prolonged or repeated skin contact may cause dermatitis, and it can be absorbed through the skin and affect behavior (symptoms similar to inhalation and ingestion), and hearing.
Inhalation: Effects may be delayed. It may cause permanent central nervous system damage and peripheral neuropathy (symptoms similar to acute exposure), liver and kidney damage, and may affect the brain.
Ingestion: Prolonged or repeated ingestion may cause accumulation of mercury in body tissues and may cause inflammation of the mouth and gums, saliva, and loosening of teeth.
Eyes: Prolonged or repeated eye exposure to mercury vapors may result in Keratitis, a brownish discoloration of the lens, band keratopathy, corneal opacity and impaired vision, photophobia, color vision disturbance.

Section 12. Ecological Information

Ecotoxicity Not available.
BODS and COD Not available.
Products of Biodegradation Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification Class B: Corrosive material
Identification : Mercury UNNA: 2809 PG: III
Special Provisions for Transport Not available.
Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercury
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury
Connecticut hazardous material survey: Mercury
Illinois toxic substances disclosure to employee act: Mercury
Illinois chemical safety act: Mercury
New York acutely hazardous substances: Mercury
Rhode Island RTK hazardous substances: Mercury
Pennsylvania RTK: Mercury
Minnesota: Mercury
Massachusetts RTK: Mercury
New Jersey: Mercury
New Jersey spill list: Mercury
Louisiana spill reporting: Mercury
California Director's List of Hazardous Substances: Mercury
TSCA B(b) inventory: Mercury
SARA 313 toxic chemical notification and release reporting: Mercury
CERCLA: Hazardous substances: Mercury: 1 lbs. (0.454 kg)

California Proposition 65 Warnings
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury

Other Regulations
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications
WHMIS (Canada) CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.

DSCL (EEC) R23- Toxic by inhalation.
R33- Danger of cumulative effects.
R38- Irritating to skin.
R41- Risk of serious damage to eyes.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

HMIS (U.S.A.)
Health Hazard 3
Fire Hazard 0
Reactivity 0
Personal Protection

WHMIS (Canada) (Pictograms)
Section 16. Other Information

MSDS Code  M3670

References  Not available.

Other Special Considerations  Not available.

Verified by Sonia Owen.  
Printed 9/12/2006.

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user’s responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.
Section 4. First Aid Measures

Eye Contact  
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.

Skin Contact  
Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Serious Skin Contact  
Not available.

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

Serious Inhalation  
Not available.

Ingestion  
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion  
Medical Conditions Aggravated by Exposure: Persons with pre-existing kidney, respiratory, eye, or neurological problems might be more sensitive to Ethylene Glycol.

Notes to Physician:  
1. Support vital functions, correct for dehydration and shock, and manage fluid balance.
2. The currently recommended medical management of Ethylene Glycol poisoning includes elimination of Ethylene Glycol and metabolites. Elimination of Ethylene Glycol may be achieved by the following methods:
   a. Emptying the stomach by gastric lavage. It is useful if initiated within <1 of ingestion.
   b. Correct metabolic acidosis with intravenous administration of sodium bicarbonate, adjusting the administration rate according to repeated and frequent measurement of acid/base status.
   c. Administer ethanol (orally or by IV (intravenously)) or fomepizole (4-methylpyrazole or Antizol) therapy by IV as an antidote to inhibit the formation of toxic metabolites.
   d. If patients are diagnosed and treated early in the course with the above methods, hemodialysis may be avoided if fomepizole or ethanol therapy is effective as has corrected the metabolic acidosis, and no renal failure is present. However, once severe acidosis and renal failure occurred, however, hemodialysis is necessary. It is effective in removing Ethylene Glycol and toxic metabolites, and correcting metabolic acidosis.

Section 5. Fire and Explosion Data

Flammability of the Product  
May be combustible at high temperature.

Auto-Ignition Temperature  
398°C (748.4°F)

Flash Points  
CLOSED CUP: 111°C (231.8°F). (Tagliahue.)

Flammable Limits  
LOWER: 3.2%

Products of Combustion  
These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances  
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances  
Risks of explosion of the product in presence of mechanical impact. Not available.

Fire Fighting Media and Instructions  
SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards  
Not available.

Special Remarks on Explosion Hazards  
Explosive decomposition may occur if combined with strong acids or strong bases and subjected to elevated temperatures.
## Section 6. Accidental Release Measures

**Small Spill**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill**

Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evaporate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7. Handling and Storage

**Precautions**

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalies.

**Storage**

Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

## Section 8. Exposure Controls/Personal Protection

**Engineering Controls**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection**

Safety glasses. Synthetic apron. Gloves (impervious). For most conditions, no respiratory protection should be needed. However, if material is heated or sprayed and if atmospheric levels exceed exposure guidelines, use an approved vapor (air purifying) respirator.

**Personal Protection in Case of a Large Spill**

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits**

- STEL: 120 (mg/m³) [Australia]
- TWA: 100 (mg/m³) from ACGIH (TLV) [United States]
- CEIL: 125 (mg/m³) from OSHA (PEL) [United States]
- CEIL: 50 (ppm) from OSHA (PEL) [United States]
- TWA: 52 STEL: 104 (mg/m³) [United Kingdom (UK)] Inhalation
- TWA: 10 (mg/m³) [United Kingdom (UK)] SKIN

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Liquid. (syrup)</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>62.07 g/mole</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>197.6°C (387.7°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-13°C (5.6°F)</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.1088 (Water = 1)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>.06 mmHg @ 20°C, .092 mmHg at 25°C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>2.14 (Air = 1)</td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is more soluble in water; log(oil/water) = -1.4</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Taste</td>
<td>Mild sweet</td>
</tr>
<tr>
<td>Color</td>
<td>Clear Colorless.</td>
</tr>
</tbody>
</table>
Ethylene glycol

Ionicity (in Water) Not available.
Dispersion Properties See solubility in water, acetone.
Solubility Soluble in cold water, hot water, acetone.
Slightly soluble in diethyl ether.
Miscible with lower aliphatic alcohols, glycerol, acetic acid, acetone and similar ketones, aldehydes, pyridine, similar coal tar bases.
Practically insoluble in benzene and its homologs, chlorinated hydrocarbons, petroleum ether.

Section 10. Stability and Reactivity Data

Stability The product is stable.
Instability Temperature Not available.
Conditions of Instability Excess heat, incompatible materials.
Incompatibility with various substances Reactive with oxidizing agents, acids, alkalis.
Corrosivity Non-corrosive in presence of glass.
Special Remarks on Reactivity Hygroscopic. Absorbs moisture from the air. Avoid contamination with materials with hydroxyl compounds. Also incompatible with aliphatic amines, isocyanates, chlorosulfonic acid, and oleum.
Special Remarks on Corrosivity Not available.
Polymerization Will not occur.

Section 11. Toxicological Information

Routes of Entry Absorbed through skin. Ingestion.
Toxicity to Animals Acute oral toxicity (LD50): 4700 mg/kg [Rat].
Acute toxicity of the vapor (LC50): >200 mg/m³ 4 hours [Rat].
Chronic Effects on Humans CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal) by ACGIH.
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, central nervous system (CNS).
Other Toxic Effects on Humans Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.
Special Remarks on Toxicity to Animals Lowest Published Toxic Dose/Conc:
TDL [Man] - Route: oral; Dose: 1555 mg/kg
Lethal Dose/Conc 50% Kill LD50 [Rabbit] - Route: dermal; Dose: 9530 ul/kg
Special Remarks on Chronic Effects on Humans May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. No human data has been reported at this time. May affect genetic material (mutagenic).
Special Remarks on other Toxic Effects on Humans Acute Potential Health Effects:
Skin: May cause skin irritation. May cause more severe response if skin is abraded. A single prolonged exposure is not likely to result in material being absorbed through skin in harmful amounts. Massive contact with damaged skin may result in absorption of potentially harmful amounts.
Eyes: Vapors or mist may cause temporary eye irritation (mild temporary conjunctival inflammation) and lacrimation. Corneal injury is unlikely or insignificant.
Ingestion: It is rapidly absorbed from the gastrointestinal tract. Oral toxicity is expected to be moderate in humans due to Ethylene Glycol even though tests with animals show a lower degree of toxicity. Excessive exposure (swallowing large amounts) may cause gastrointestinal tract irritation with nausea, vomiting, abdominal discomfort, diarrhea. It can affect behavior/cellular nervous system within 0.5 to 12 hours after ingestion. A transient inebriation with excitement, stupor, headache, slurred speech, ataxia, somnolence, and euphoria, similar to ethanol intoxication, can occur within the first several hours. As the Ethylene Glycol is metabolized, metabolic acidosis and further central nervous system depression (convulsions, muscle weakness) develop. Serious intoxication may develop to coma associated with hypoventilation, hypoorexia, and less commonly seizures, and meningoitis. 12 to 24 hours
after ingestion, cardiovascular symptoms such as tachycardia, and hypertension may occur as well as hypoxia, hyperventilation, cardiomegaly, myocarditis, hypotension progressing to cardiogenic shock, and congestive heart failure. 24 to 72 hours after ingestion, albuminuria, oliguria, hematuria, proteinuria, acute tubular necrosis, renal failure, and occasionally bone marrow suppression occur. Calcium oxalate crystals may be detected, but absence of them does not rule out the diagnosis. Hypocalcemia, due to chelation as calcium oxalate may occur. Serious hepatic injury is uncommon following acute ingestion. Myositis and effects on the blood (pancytopenia, leukocytosis, lymphocytosis), may also occur following ingestion. Swallowing small amounts during normal handling operations is unlikely to cause injury.

Inhalation: At room temperature, vapors are minimal due to low vapor pressure (low volatility). With good ventilation, a single exposure is not expected to cause adverse effects. If material is heated or area is poorly ventilated, vapor/mist may accumulate and concentrations may be attained that are sufficient to cause respiratory tract and mucous membrane irritation, with burning sensation along the trachea, and coughing. Inhalation of Ethylene Glycol vapor may also cause episodes of nystagmus, loss of consciousness, and lymphocytosis.

Chronic Potential Health Effects:
Skin: Prolonged skin contact is unlikely to result in absorption harmful amounts. Repeated skin exposure to large quantities may result in the absorption of harmful quantities.

Inhalation: Repeated excessive exposure may cause irritation of the upper respiratory tract and possible corneal damage.

Ingestion: Repeated excessive ingestion may affect the liver (hepatitis, hepatocellular necrosis), kidneys (kidney damage, with or without deposits of calcium oxalate in the kidneys), behavior, or central nervous system, or peripheral nervous system, and blood.

Medical Conditions Aggravated by Exposure:
Persons with pre-existing kidney, respiratory, eye, or neurological problems might be more sensitive to Ethylene Glycol.

Notes to Physician:
1. Support vital functions, correct for dehydration and shock, and manage fluid balance.
2. The currently recommended medical management of Ethylene Glycol poisoning includes elimination of Ethylene Glycol and metabolites. Elimination of Ethylene Glycol may be achieved by the following methods:
   a. Emptying the stomach by gastric lavage. It is useful if initiated within < 1 of ingestion.
   b. Correct metabolic acidosis with intravenous administration of sodium bicarbonate, adjusting the administration rate according to repeated and frequent measurement of acid/base status.
   c. Administer ethanol (orally or by IV (intravenously)) or fomepizole (4-methylpyrazole or Antizol) therapy by IV as an antidote to inhibit the formation of toxic metabolites.
   d. If patients are diagnosed and treated early in the course with the above methods, hemodialysis may be avoided if fomepizole or ethanol therapy is effective and has corrected the metabolic acidosis, and no renal failure is present. However, once severe acidosis and renal failure occurred, however, hemodialysis is necessary. It is effective in removing Ethylene Glycol and toxic metabolites, and correcting metabolic acidosis.

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Section 12. Ecological Information

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Ecotoxicity in water (LC50): 41000 mg/l 96 hours [Fish (Trout)]. 46300 mg/l 48 hours [water flea]. 34250 mg/l 96 hours [Fish (bluegill fish)]. 34250 mg/l 72 hours [Fish (Goldfish)].</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD₅ and COD</td>
<td>Not available.</td>
</tr>
<tr>
<td>Products of Biodegradation</td>
<td>Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</td>
</tr>
<tr>
<td>Toxicity of the Products of Biodegradation</td>
<td>The products of degradation are less toxic than the product itself.</td>
</tr>
<tr>
<td>Special Remarks on the Products of Biodegradation</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 13. Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Section 14. Transport Information

DOT Classification  
Not a DOT controlled material (United States).

Identification  
Not applicable.

Special Provisions for Transport  
Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations  
Illinois toxic substances disclosure to employee act: Ethylene glycol  
Illinois chemical safety act: Ethylene glycol  
New York release reporting list: Ethylene glycol  
Rhode Island RTK hazardous substances: Ethylene glycol  
Pennsylvania RTK: Ethylene glycol  
Minnesota: Ethylene glycol  
Massachusetts RTK: Ethylene glycol  
Massachusetts spill list: Ethylene glycol  
New Jersey: Ethylene glycol  
Louisiana spill reporting: Ethylene glycol  
TSCA 8(b) inventory: Ethylene glycol  
TSCA 4(a) proposed test rules: Ethylene glycol  
SARA 313 toxic chemical notification and release reporting: Ethylene glycol  
CERCLA: Hazardous substances: Ethylene glycol 5000 lbs. (2268 kg)

California Proposition 65  
Warnings  
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations  
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications  
WHMIS (Canada)  
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC)  
R22- Harmful if swallowed.  
S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.)  
| Health Hazard | 1 |
| Fire Hazard | 1 |
| Reactivity | 0 |
| Personal Protection | C |

National Fire Protection Association (U.S.A.)  
Health 1 0 1 0 0

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)
Ethylene glycol

Section 16. Other Information

MSDS Code E3370

References Not available.

Other Special Considerations Not available.


Verified by Sonia Owen.

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CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.