# Material Safety Data Sheet

## Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### 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 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

### RTECS
KW2975000

### TSCA
TSCA (b) inventory: Ethylene glycol

### CI#
Not available.

### NFPA Hazard Rating

### HMIS Hazard Rating

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

## Section 2. Composition and Information on Ingredients

### Exposure Limits

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Ethylene glycol</td>
<td>107-21-1</td>
<td></td>
<td></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

### 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.

**Continued on Next Page**
### 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 antitoxin 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. |

### 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). (Tagliabue.) |
| 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. |
| 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. |

Continued on Next Page
### 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 evacuate 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, alkalis.

**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>Physical state and appearance</th>
<th>Odor</th>
<th>Molecular Weight</th>
<th>Taste</th>
<th>pH (1% soln/water)</th>
<th>Color</th>
<th>Boiling Point</th>
<th>Melting Point</th>
<th>Critical Temperature</th>
<th>Specific Gravity</th>
<th>Vapor Pressure</th>
<th>Vapor Density</th>
<th>Volatility</th>
<th>Odor Threshold</th>
<th>Water/Oil Dist. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid. (syrupy)</td>
<td>Odorless.</td>
<td>62.07 g/mole</td>
<td>Mild sweet</td>
<td>Not available.</td>
<td>Clear Colorless.</td>
<td>197.6°C (387.7°F)</td>
<td>-13°C (8.6°F)</td>
<td>Not available.</td>
<td>1.1088 (Water = 1)</td>
<td>.06 mmHg @ 20°C; .092 mmHg at 25°C</td>
<td>2.14 (Air = 1)</td>
<td>Not available.</td>
<td>Not available.</td>
<td>The product is more soluble in water; log(oil/water) = -1.4</td>
</tr>
</tbody>
</table>

*Continued on Next Page*
**Ethylene glycol**

<table>
<thead>
<tr>
<th>Ionicity (in Water)</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water, acetone.</td>
</tr>
<tr>
<td>Solubility</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Section 10. Stability and Reactivity Data**

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

**Section 11. Toxicological Information**

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Absorbed through skin. Ingestion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to Animals</td>
<td>Acute oral toxicity (LD50): 4700 mg/kg [Rat]. Acute toxicity of the vapor (LC50): &gt;200 mg/m³ 4 hours [Rat].</td>
</tr>
<tr>
<td>Chronic Effects on Humans</td>
<td>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).</td>
</tr>
<tr>
<td>Other Toxic Effects on Humans</td>
<td>Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.</td>
</tr>
<tr>
<td>Special Remarks on Toxicity to Animals</td>
<td>Lowest Published Toxic Dose/Conc: TDL [Man] - Route: oral; Dose: 15gm/kg Lethal Dose/Conc 50% Kill LD50 [Rabbit] - Route: dermal; Dose: 9530 ul/kg</td>
</tr>
<tr>
<td>Special Remarks on Chronic Effects on Humans</td>
<td>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)</td>
</tr>
<tr>
<td>Special Remarks on other Toxic Effects on Humans</td>
<td>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/central 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 hypotonia, hyporeflexia, and less commonly seizures, and meningismus. 12 to 24 hours</td>
</tr>
</tbody>
</table>

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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. Mydriasis 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/central nervous system/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 ornation 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.

Ecotoxicity

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)].

BOD5 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.

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
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

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

Continued on Next Page
### Protective Equipment

- Gloves.
- Lab coat.
- Safety glasses.

### Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>E3370</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other Special Considerations</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**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.