Material Safety Data Sheet

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

PRODUCT NAME: ETHYLENE GLYCOL

SYNONYMS: ETHYLENE DIHYDRATE
            MONOETHYLENE GLYCOL
            1,2-DIHYDROXYETHANE
            1,2-ETHANEDIOL

OLD WORLD INDUSTRIES I, LTD.
4065 COMMERCIAL AVENUE
NORTHBROOK, IL 60062
UNITED STATES

2. COMPOSITION / INFORMATION on INGREDIENTS

COMPONENT: ETHYLENE GLYCOL *
CAS NUMBER: 107-21-1 99.5%

*OSHA hazardous according to 29 CFR 1910.1200

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PRODUCT DESCRIPTION: Ethylene glycol is a clear, colorless liquid with a faint odor.

HEALTH HAZARDS: Overexposure can cause eye and skin irritation, upper respiratory tract irritation, and difficulty breathing. Ingestion of large quantities may be harmful or, in extreme cases, fatal.

FIRST AID: For eye contact, flush with plenty of water. For skin contact, wash with soap and water. If persistent irritation to eyes or skin develops, seek medical attention. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately. If ingested, DO NOT induce vomiting. Seek medical assistance.

FIRE FIGHTING: CAUTION! Spraying with water or foam can cause frothing.

POTENTIAL HEALTH EFFECTS

ROUTES OF EXPOSURE:
Skin, eyes, inhalation, ingestion.

SIGNS AND SYMPTOMS OF EXPOSURE:
Incidental ingestion of small amounts of ethylene glycol is not likely to cause any significant health effects. Ingestion of large quantities may result in irritability, mental sluggishness, dizziness, malaise, abdominal or back pain. Changes in urine output and appearance, fluid retention, jaundice (yellowish skin color), kidney and liver damage, respiratory failure, and unconsciousness are evidence of severe poisoning. Death may occur in extreme cases.

EMERGENCY: CHEMTREC (IN USA) (800) 424-9300 (703) 527-3887 (OUTSIDE USA)
3. HAZARDS IDENTIFICATION

IMMEDIATE EFFECTS

SKIN:
Contact with liquid may cause slight skin irritation.

EYES:
Contact with liquid may cause slight eye irritation.

INHALATION:
Inhalation of mists or high concentrations of vapors (e.g., from hot operations) may cause upper respiratory tract irritation, headaches or nausea.

INGESTION:
Ingestion of large quantities may be harmful, and in extreme poisoning, may be fatal; causes central nervous system depression, cardiopulmonary effects, and kidney and liver damage. See “Signs and Symptoms” for more information.

DELAYED / LONG TERM EFFECTS

CARCINOGENIC EFFECTS:
Ethylene glycol is not considered a carcinogen.

MUTAGENIC:
Ethylene glycol is not considered a mutagen.

TERATOGENIC:
Ethylene glycol is considered to be an animal teratogen based on studies in which high levels were given in drinking water. Inhalation and dermal exposure have not produced significant fetotoxicity or malformations in animals. See Section 11, “Toxicology”, for further information.

TARGET ORGAN EFFECTS:
Central nervous system, kidney, liver, fetus.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
Exposure to this chemical may aggravate preexisting skin and respiratory conditions.

4. FIRST AID MEASURES

SKIN:
Wash with soap and water after handling material. If persistent irritation develops, get medical attention.

EYES:
If eye contact occurs, flush with water. If persistent irritation develops, get medical attention.
4. FIRST AID MEASURES-(continued)

INHALATION:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

INGESTION:
If large quantities of this material are swallowed, call a physician immediately. DO NOT induce vomiting. Never give anything by mouth or induce vomiting in an unconscious person.

NOTE TO PHYSICIANS:
The principal toxic effects of ethylene glycol, when swallowed, are kidney damage and metabolic acidosis. Ethanol is antidotal, and early administration may block the formation of toxic metabolites of ethylene glycol in the liver. Ethanol should be given intravenously, as a 5% solution in sodium bicarbonate, at a rate of about 10ml/hr. A desired therapeutic level of ethanol in blood is 100mg/dl. Hemodialysis may be required. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism has not been elucidated but it appears to be noncardiogenic in origin in ventilation and positive end expiratory pressure may be applied. Correction of acidosis is essential.

5. FIRE FIGHTING MEASURES

NPFA (H, F, R): 1, 1, 0

FLAMMABLE PROPERTIES
UPPER EXPLOSIVE LMT : 15.3% in air (by volume)
LOWER EXPLOSIVE LMT : 3.2% in air (by volume)
AUTOIGNITION TEMP : 400 °C (752 °F)
FLASHPOINT (CC) : 111 °C (232 °F)

HAZARDOUS PRODUCTS OF COMBUSTION:
Compounds of carbon, hydrogen and oxygen, including carbon monoxide and other toxic gases. The exact composition will depend on the conditions of combustion.

EXTINGUISHING MEDIA:
Use carbon dioxide or dray chemical for small fires; alcohol type aqueous film-forming foam or water spray for large fires.

FIRE FIGHTING INSTRUCTIONS:
If the potential exists for exposure to vapors or products of combustion, wear complete personal protective equipment, including self-contained breathing apparatus with full face piece operated in pressure demand or other positive pressure mode. Water spray can be used to reduce intensity of flames and to dilute spills to nonflammable mixtures. Use water spray to cool fire-exposed structures and vessels. CAUTION! Spraying with foam or water can cause frothing.
6. ACCIDENTAL RELEASE MEASURES

If spilled or released, eliminate ignition sources. Avoid eye or skin contact; see “Section 8, Exposure Controls/Personal Protection”, for respirator information. Place leaking containers in well-ventilated area with spill containment. If fire potential exists, blanket spill with alcohol-type aqueous film-forming foam or use water spray to disperse vapors. Contain spill to facilitate cleanup. Cleanup methods may include absorbent materials, vacuum truck, etc. Avoid runoff into storm sewers and ditches which lead to natural waterways.

Call the National Response Center (800-424-8802) if the quantity spilled is equal to or greater than the reportable quantity (RQ) under CERCLA “Superfund”: ethylene glycol 5000 lb/day.

7. HANDLING AND STORAGE

HANDLING:

Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor or mist. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before reuse. Destroy contaminated leather clothing.

STORAGE:

Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor. Use only DOT-approved containers.

Do not store with incompatible materials; see “Section 10, Stability and Reactivity”.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

PROTECTIVE EQUIPMENT:

A safety shower and eye wash should be readily available.

SKIN:

Wear clothing and gloves to prevent repeated or prolonged contact. Gloves may be rubber, nitrile rubber, neoprene or polyvinyl chloride.

EYES:

Wear chemical goggles when there is a reasonable chance of eye contact.

INHALATION:

Use a respirator approved by NIOSH/MSHA to maintain exposure below recommended limits.
EXPOSURE GUIDELINES:

ETHYLENE GLYCOL (107-2-1-1)

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<th>ACGIH TLV</th>
<th>HCC WEL</th>
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<td>125 MG/M3 (CEIL)</td>
<td>100 MG/M3 (CEIL)</td>
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<tr>
<td>50 PPM (CEIL)</td>
<td>39.4 PPM (CEIL)</td>
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The ACGIH values are for ethylene glycol aerosol.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, colorless liquid.
ODOR: Faint odor.
PHYSICAL STATE: Liquid.
VAPOR PRESSURE: <0.1 mmHg at 20°C.
VAPOR DENSITY: 2.2 (air = 1 at 20°C)
BOILING POINT: 197 °C (387 °F)
FREEZING POINT: -13 °C (9°F)
SOLUBILITY: Complete in water.
SPECIFIC GRAVITY: 1.115 (20/20)
MOLECULAR WEIGHT: 62.1

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable and normally unreactive.

CONDITIONS TO AVOID: Heat, sparks and open flames.

INCOMPATIBILITY: Sulfuric acid and other dehydrating agents; nitric acid; oxygen, hydrogen peroxide, perchloric acid and other strong oxidizing agents; acetic anhydride; strong acids and bases at high temperatures; other materials reactive with hydroxyl compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Compounds of carbon, hydrogen and oxygen, including carbon monoxide and other toxic gases. The exact composition will depend on the causes and conditions of decomposition.

HAZARDOUS POLYMERIZATION: Will not occur.

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15. REGULATORY INFORMATION

RECIPIENT MUST COMMUNICATE ALL PERTINENT INFORMATION HEREIN TO EMPLOYEES AND CUSTOMERS.

STATE REGULATIONS
The following chemicals associated with the product are subject to the right-to-know regulations in these states:

ETHYLENE GLYCOL (107-21-1): FL, IL, LA, MA, NJ, PA, RI

U.S. FEDERAL REGULATIONS
We certify that all components are either on the TSCA inventory or qualify for an exemption.

INTERNATIONAL REGULATIONS
SARA 313: ETHYLENE GLYCOL 99.5% (107-21-1)

ENVIRONMENTAL
CERCLA: ETHYLENE GLYCOL 99.5% (107-21-1)
SARA 304: ETHYLENE GLYCOL 99.5% (107-21-1)

SARA 31 1/3 12
Acute health----------------Yes
Chronic health---------------Yes
Fire-------------------------No
Sudden release of pressure--No
Reactive---------------------No

Clean Air Act, 1990, section 112: ETHYLENE GLYCOL (107-21-1)

INTERNATIONAL REGULATIONS
Listed on the chemical inventories of the following countries: Australia, Canada, Europe (EINECS), Japan and Korea.

WHMIS INGREDIENT DISCLOSURE LISTED COMPONENTS:
Ethylene glycol

16. OTHER INFORMATION

HAZARD RATINGS

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EMERGENCY: CHEMTREC (IN USA)  (800) 424-9300  (703) 559-2082  (OUTSIDE USA)
15. REGULATORY INFORMATION

DISCLAIMER:
The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Old World Industries I, Ltd. makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. The user has sole responsibility to determine the suitability of the material for any use and the manner of use contemplated.

Users must meet all applicable safety and health standards.