Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name: Triethylene Glycol
Synonyms: 2,2'- ethylenedioxyethanol; 1,2-bis(2-hydroxyethoxy)ethane; and others
CAS#: 112-27-6
Europe EC#: 203-953-2
Product Uses: heat transfer fluid, humectant, hydraulic fluid, plasticiser, solvent for pesticides, gums, resins dyes, etc

EMERGENCY INFORMATION
Canada: Call CANUTEC (collect) (613) 996-6666
U.S.A.: Call CHEMTREC (800) 424-9300

2. HAZARDS

GHS Class: not hazardous
Signal Words: no Signal Words
Hazard Statements: no hazard statements

Canada – WHMIS
Key: not controlled under WHMIS
B 2 – Flash Point < 38°C; B 3 – Flash Point > 38°C & < 93°C
D 1 – Immediately Toxic; D 2 – Chronic Toxicity
C – Oxidising Substance; E – Corrosive; F – Reactive Substance

3. COMPOSITION

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
<th>TWAEV/TLV</th>
<th>LD$\text{so}(mg/kg)$</th>
<th>LD$\text{se}(mg/kg)$</th>
<th>LC$\text{50 ppm}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-bis(2-hydroxyethoxy)ethane</td>
<td>100%</td>
<td>not listed</td>
<td>7900</td>
<td>&gt;22,500</td>
<td>&gt;720</td>
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</tbody>
</table>

4. FIRST AID

SKIN: Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly lauded.
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION: Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim’s head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

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5. **FIRE FIGHTING & FLAMMABILITY**

- **Flash Point**: 177°C / 350°F (open cup)
- **Autoignition Temperature**: 371°C / 700°F
- **Flammable Limits**: 0.9% – 9.2%
- **Combustion Products**: carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
- **Firefighting Precautions**: foam, dry chemical, water fog or spray; firefighters must wear SCBA
- **Static Charge Accumulation**: cannot accumulate a static charge on agitation or pumping

6. **ACCIDENTAL RELEASE MEASURES**

- **Leak Precaution**: dyke to control spillage and prevent environmental contamination
- **Handling Spill**: ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep, aluminium shovel & store in closed containers for recycling or disposal

7. **HANDLING & STORAGE**

Store in a dry environment, away from sources of ignition, heat and oxidising agents. Ensure that containers, whether empty or full, are tightly sealed unless in use.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

8. **EXPOSURE CONTROL & PERSONAL PROTECTION**

- **Ontario TWAEV**: not listed
- **Ontario STEV**: not listed
- **ACGIH TLV**: not listed
- **ACGIH STEL**: not listed
- **OSHA PEL**: not listed
- **OSHA STEL**: not listed
- **Ventilation**: no special ventilation required
- **Hands**: no special protective gloves required
- **Eyes**: safety glasses with side shields – *always protect the eyes*
- **Clothing**: no special protective clothing required

9. **PHYSICAL PROPERTIES**

- **Odour & Appearance**: clear, colourless, viscous, odourless, hygroscopic liquid with no odour
- **Odour Threshold**: not known – odourless
- **Vapour Pressure**: below 1 x 10⁻³mmHg / 1.3 x 10⁻⁴kPa (20°C / 68°F)
- **Evaporation Rate**: not known – not volatile
- **Vapour Density (air = 1)**: 5.2
- **Boiling Range**: 287°C / 549°F
- **Freezing Point**: -5°C / 23°F
- **Specific Gravity**: 1.125 (20/20°C)
- **Water Solubility**: complete
- **Also soluble in**: most organic solvents, limited solubility in diethyl ether or in aliphatic hydrocarbons
- **Log_{O/W} (Octanol/H₂O partition)**: -2.08, also -1.98 & -1.24
- **Viscosity**: 48centipoise (25°C / 77°F)
- **pH**: none – *(does not liberate hydrogen ions when dissolved)*
- **Conversion Factor**: 1ppm = 6.1mg/m³
- **Molecular Weight**: 150grams per mole

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10. **REACTIVITY**

Dangerously Reactive With: strong oxidising agents; may undergo violent decomposition contact with 70% perchloric acid
Also Reactive With: none known

Stability: stable; will not polymerize
Decomposes in Presence of: not known
Decomposition Products: none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact: no

11. **TOXICITY**

**Effects, Acute Exposure**

Skin Contact: no effect
Skin Absorption: slight; no toxic effects by this route
Eye Contact: may cause discomfort, tears – will not damage
Inhalation: little or no effect noted, even in animals subjected to continuous product mist
Ingestion: may cause abdominal discomfort – not a route of industrial exposure

**Effects, Chronic Exposure**

General: no known effect until animals are given 3% – 5% in their drinking water which caused renal damage
Sensitising: not a sensitiser in humans or animals
Carcinogen/Tumorigen: not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect: no known effect in humans or animals
Mutagen: no known effect on humans or animals
Synergistic With: not known

LD₅₀ (oral): 15,000-22,000mg/kg (rat), 18,500-21,000mg/kg (mouse), 8400mg/kg (rabbit), 7900mg/kg (guinea pig)

LD₅₀ (skin): over 22,500mg/kg (rabbit), over 25,000mg/kg (rabbit)

LC₅₀ (inhalation): >720ppm (>4400mg/m³) (rat)

12. **ECOLOGICAL INFORMATION**

Bioaccumulation: cannot bioaccumulate
Biodegradation: biodegrades readily & rapidly in the presence of oxygen; variable rate – complete elimination reported
Abiotic Degradation: in 7-11 days; in another test, 25–92% seen in 4 weeks; much faster with adapted microorganisms
Mobility in soil, water: water soluble; moves readily in soil & water

**Aquatic Toxicity**

LC₅₀ (Fish, 96hr): 61,000mg/litre (Lepomis macrochirus), 59,900-92,500mg/litre (Pimephelas promelas), 73,500mg/litre (Salvelinus fontinalis), >10,000mg/litre (Menidia beryllina) & others
EC₅₀ (Crustacea, 48hr): 39,300-52,400mg/litre (Daphnia magna – several tests) & others
EC₅₀ (Protozoa, parduzci): no mortality at 10,000mg/litre (Chilomonas paraemacium, Entosyphon sulcatum & Uronema parduzci)
EC₅₀ (Bacteria): 33,000mg/litre (Photobacterium phosphoreum), >10,000mg/litre (Uronema parduzci)

13. **DISPOSAL**

Waste Disposal: do not flush to sewer, recycle solvent if possible, if local regulations permit, may be put in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

Containers:

- Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
- Pails must be vented and thoroughly dried prior to crushing and recycling.
- IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years.
  
  Never cut, drill, weld or grind on or near this container, even if empty

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Product Name: Triethylene Glycol

14. TRANSPORT CLASSIFICATION

Canada TDG PIN AND Shipping Name UN – not regulated for transport
U.S.A. 49 CFR Class & Packing Group not regulated for transport
Marine Pollutant not a marine pollutant
ERAP Required NO

15. REGULATIONS

Canada DSL on inventory
U.S.A. TSCA on inventory
Europe EINECS on inventory

U.S.A. Regulations:
Allowable Tolerances: Residues of triethylene glycol are exempted from the requirement of a tolerance when used as a deactivator in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOMCI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOMCI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Triethylene glycol is produced, as an intermediate or final product, by process units covered under this subpart.

FIFRA Requirements: Residues of triethylene glycol are exempted from the requirement of a tolerance when used as a deactivator in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. The Agency has determined triethylene glycol is eligible for reregistration. Based on the available data, the Agency has concluded that triethylene glycol exhibits low toxicity and exposures to triethylene glycol used as both an active or inert ingredient do not present risks of concern to the Agency. Therefore, no mitigation measures are necessary at this time. As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their future use. Under this pesticide reregistration program, EPA examines health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether they are eligible for reregistration. In addition, all pesticides must meet the new safety standard of the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA ’88 were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern and List D pesticides of less concern. Triethylene glycol is found on List C. Case No: 3146; Pesticide type: insecticide, fungicide, antimicrobial; Case Status: OPP is reviewing data from the pesticide’s producers regarding its human health and/or environmental effects, or OPP is determining the pesticide’s eligibility for reregistration and developing the RED document.; Active ingredient (AI): triethylene glycol; Data Call-in (DCI) Date(s): 9/30/92; AI Status: The producers of the pesticide have made commitments to conduct the studies and pay the fees required for reregistration, and are meeting those commitments in a timely manner.

FDA Requirements: Triethylene glycol is an indirect food additive for use only as a component of adhesives.

16. OTHER INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577
Data from RTECS, HSDB (Haz. Substance Data Base), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.
Preparation Date: July 2001 Revision Date: March 2004, May 2007, May 2010, May 2013

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