

Material Safety Data for: Triethylene Glycol

1. PRODUCT IDENTIFICATION

Name 1,2-Bis(2-hydroxyethoxy)ethane
Synonyms 2,2'-ethylenedioxyethanol, triethylene glycol and others
CAS# 112-27-6
Europe EC# 203-953-2
Product Uses heat transfer fluid, humectant, hydraulic fluid, plasticiser, solvent in pesticides, solvent for gums, resins & dyes, etc

2. INGREDIENTS

	%	TWAEV / TLV ppm / mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
1,2-Bis(2-hydroxyethoxy)ethane	100%	not listed	7900	>22,500	>720

3. (a) HAZARDS SUMMARY

Hazards, Quick Guide:	<i>not hazardous</i>
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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

U.S.A. – HMIS

Key:

Health – 0, Fire – 1, Reactivity – 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. (b) HAZARDS – 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
LD ₅₀ (oral)	15,000-22,000mg/kg (rat), 18,500-21,000mg/kg (mouse), 8400mg/kg (rabbit), 7900mg/kg (guinea pig)
LD ₅₀ (skin)	over 22,500mg/kg (rabbit), over 25,000mg/kg (rabbit)
LC ₅₀ (inhalation)	>720ppm (>4400mg/m ³) (rat)

Please ensure that this MSDS is given to, and explained to people using this product.

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4. FIRST AID

- SKIN: Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.
 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.

5. PHYSICAL PROPERTIES

Odour & Appearance	clear, colourless, viscous, odourless, hygroscopic liquid with no odour
Odour Threshold	not known - odourless
Vapour Pressure	below 1×10^{-3} mmHg / 1.3×10^{-4} kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	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
Viscosity	48centipoise (25°C / 77°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Conversion Factor	1ppm = 6.1mg/m ³
Molecular Weight	150grams per mole

6. FLAMMABILITY & FIRE FIGHTING

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
Fire Fighting Precautions	foam, dry chemical, water fog or spray; fire fighters must wear SCBA
Static Charge Accumulation	readily accumulates a static charge on agitation or pumping

7. STABILITY / REACTIVITY

Dangerously Reactive With	strong oxidising agents
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

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8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	not listed
OSHA PEL	not listed
STEL	not listed
Ventilation	no special ventilation required
Hands	no special protective gloves required
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required

9. HANDLING & STORAGE

Store in a dry environment, away from sources of ignition, heat and oxidising agents. Empty containers may contain a flammable / explosive vapour. Ensure that containers, whether empty or full, or part 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.

10. SPILL PROCEDURES

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 & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

11. 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
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. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is not a bioaccumulator
Biodegradation	this product degrades readily and rapidly in the presence of oxygen; complete elimination reported in 7-11 days; in another test, 25–92% biodegradation seen in 4 weeks
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 11 hours
Mobility in soil, water	this product is water soluble and moves readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	61,000mg/litre (Lepomis macrochirus), 59,900-92,500mg/litre (Pimephelas promelas),
73,500mg/litre	(Salvelinus fontinalis) & others
EC ₅₀ (Crustacea, 48hr)	39,300-52,400mg/litre (Daphnia magna) & others
EC ₀ (Protozoa)	no mortality at 10,000mg/litre (Chilomonas paramaecium, Entosyphon sulcatum & Uronema parduzyi)
EC ₅₀ (Bacteria)	33,000mg/litre (Photobacterium phosphoreum)

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13. TRANSPORT REGULATIONS

Canada TDG	PIN	UN-not regulated for transport
AND	Shipping Name	not regulated for transport
U.S.A. 49 CFR	Class	not regulated for transport
	Packing Group	not regulated for transport
Marine Pollutant		not a marine pollutant

14. EMERGENCY INFORMATION

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

15. REGULATIONS

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

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 (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI 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. PREPARATION INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCLID Datasheets (European Chem. Substance Info. System), & others, as available

Preparation Date: July 2001 Revision Date: March 2004, May 2007, May 2010

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