

Material Safety Data for: Tetraethylene Glycol

1. PRODUCT IDENTIFICATION

Name ethanol, 2,2'-(oxybis(ethyleneoxy))di-
Synonyms tetraethylene glycol, TEG
CAS# 112-60-7
Product Uses hydraulic fluids, plasticizer, solvent in coatings, desiccant for natural gas

2. INGREDIENTS

	%	TWAEV / TLV mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
Tetraethylene Glycol	100%	not listed	10,000	over 18,000	not known

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	little to no effect
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	little to no effect
Inhalation	little to no effect
Ingestion	little to no effect

Effects, Chronic Exposure

General	little to no effect
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)	10,000, 18,050, 32,700 & 36,000mg/kg (rat), 18,800mg/kg (guinea pig)
LD ₅₀ (skin)	>18,000, >20,000 & 22.570mg/kg (rabbit)
LC ₅₀ (inhalation)	not known – <i>no mortality observed in several tests</i>

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
Odour Threshold	none - odourless
Vapour Pressure	4.65x10 ⁻⁵ mmHg / 6.2x10 ⁻⁶ kPa (26°C / 79°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	not known – <i>not volatile</i>
Vapour Density (air = 1)	6.5 (theoretical)
Boiling Range	327°C / 621°F
Freezing Point	-6°C / 20°F
Specific Gravity	1.248 (20/20°C)
Water Solubility	complete
Also soluble in	in alcohols, glycols diethyl ether, carbon tetrachloride
Viscosity	62centipoise (20°C / 68°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Molecular Weight	194grams per mole

6. FLAMMABILITY & FIRE FIGHTING

Flash Point	182°C / 360°F (closed cup)
Autoignition Temperature	not known
Flammable Limits	not known
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions	foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water – water jet spreads flames; 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	70% perchloric acid
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 mechanical ventilation required
Hands	no special hand protection required
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required

9. HANDLING & STORAGE

Tetraethylene Glycol is hygroscopic. Store in a dry environment, away from oxidising agents. Always ensure that containers, whether empty or full, or part full, are tightly sealed unless in use.

Avoid breathing product mist.

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

12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is highly water soluble and cannot bioaccumulate
Biodegradation bacterial	this product degrades readily in the presence of oxygen; 23% degradation in 20 days without "acclimation" & 88% in 20 days after ~50 days "acclimation"
Abiotic Degradation extremely	this product reacts with atmospheric hydroxyl radicals; estimated half-life in air is 8 hours – <i>low vapour pressure suggests that this will be a minor route for degradation</i>
Mobility in soil, water	this product is water soluble and moves readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	>1000mg/litre (oncorhynchus mykiss)
EC ₅₀ (Crustacea, 48hr)	>1000mg/litre (daphnia magna)

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13. TRANSPORT REGULATIONS

<i>Canada TDG</i>	PIN	UN-not regulated for shipping
AND	Shipping Name	not regulated for shipping
<i>USA CFR 49</i>	Class	not regulated for shipping
	Packing Group	not regulated for shipping
Marine Pollutant		not a marine pollutant

14. EMERGENCY INFORMATION

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

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory (EC# 203-989-9)

NIOSH Recommendations: NIOSH recommends reducing exposure to lowest feasible concn & preventing contact with the skin.

16. PREPARATION INFORMATION

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

File Name: tetra-glycol

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

*Preparation Date: **November 2003** Revision Date: **August 2006, July 2009***

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