

Material Safety Data for: Glycol Ether EE Acetate

1. PRODUCT IDENTIFICATION

Name	Ethylene Glycol Monoethyl Ether Acetate
Synonyms	2-ethoxyethyl acetate,
CAS#	111-15-9
Europe EC#	203-839-2
Product Uses	solvent, coupling agent

2. INGREDIENTS

	%	TWAEV / TLV ppm / mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
2-ethoxyethyl acetate	100%	4 / 27 (skin)	1910	10,250	1500

3. (a) HAZARDS SUMMARY

Hazards, Quick Guide: flammable liquid, heavy vapour may travel, distant ignition and flashback are possible; possible reproductive toxin

Canada – WHMIS

Key:

B 2 D 2A

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 – 2, Fire – 2, Reactivity – 0

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

3. (b) HAZARDS – TOXICITY

Effects, Acute Exposure

Skin Contact	may be very slightly irritating
Skin Absorption	yes; no toxic effects likely by this route
Eye Contact	may be very slightly irritating
Inhalation	headache, dizziness, drowsiness, nausea – <i>air concentrations high enough to be toxic are objectionable</i>
Ingestion	headache, dizziness nausea, metabolic acidosis & kidney damage possible – <i>not a route of industrial exposure</i>

Effects, Chronic Exposure

General	prolonged exposure may cause dermatitis; prolonged absorption in rats caused kidney 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, but suspect reproductive toxin – reduced fertility is seen in rodents, but at high doses likely to cause maternal toxicity (<i>not clear in the relevant study</i>)
Mutagen	no known effect on humans or animals
Synergistic With	acetone <i>reduces toxic effect</i>
LD ₅₀ (oral)	2700 & 2900 & 5100mg/kg (rat), 1950mg/kg (rabbit), 1910mg/kg (guinea pig),
LD ₅₀ (skin)	10,300mg/kg (rabbit), 19,500mg/kg (guinea pig)
LC ₅₀ (inhalation)	2120 & 3170ppm (rat), >2000ppm (rabbit)

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, liquid with mild, sweetish ether-like odour and bitter taste
Odour Threshold	not known
Vapour Pressure	2.25mmHg / 0.3kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	below 0.2
Vapour Density (air = 1)	4.7
Boiling Range	156°C / 314°F
Freezing Point	-62°C / -79°F
Specific Gravity	0.975 (20/20°C)
Water Solubility	230 grams per litre (20°C / 68°F)
Also soluble in	most organic solvents
Viscosity	1.35centipoise (20°C / 68°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Conversion Factor	1ppm = 5.39g/m ³
Molecular Weight	132grams per mole

6. FLAMMABILITY & FIRE FIGHTING

Flash Point	47°C / 117°F (closed cup)
Autoignition Temperature	380°C / 716°F
Flammable Limits	1.7% - 10.4% (upper limit also given as 19.4%)
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; firefighters must wear SCBA
Static Charge Accumulation	cannot accumulate a static charge on agitation or pumping

7. STABILITY / REACTIVITY

Dangerously Reactive With	strong oxidising agents; strong acids, strong alkalis
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	5ppm / 27mg/m ³
OSHA PEL	100ppm / 540mg/m ³
STEL	ppm / mg/m ³
Ventilation handling	mechanical ventilation may be required to control airborne titre below regulated limits; depending on procedures, respirators with organic vapour cartridge should be available for all workers in the area for "escape" in case ventilation fails (<i>store respirator in airtight container ("Tupperware" or "Zip-Lock") to maintain "freshness"</i>)
Hands	polyvinyl alcohol (not PVC) or "Silver Shield" gloves may be worn – <i>consult supplier to confirm suitability</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required

9. HANDLING & STORAGE

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. Empty containers may contain a flammable / explosive vapour. 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 prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower must 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, 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 rapidly eliminated (biological half-life = 24 hours) and cannot bioaccumulate
Biodegradation days	this product degrades readily in the presence of oxygen; 41% in 5 days, 69% biodegradation in 20 days
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated ½-life in air is 15-18 hours hydrolyses in water with a half-life of 300 days at pH 7 and 30 days at pH 8
Mobility in soil, water	this product is highly water soluble and will move readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	45mg/litre (Ictalurus punctatus), 96mg/litre (Lepomis macrochirus), 42mg/litre (Pimephelas promelas), 40mg/litre (Menidia beryllina)
EC ₅₀ (Crustacea, 24hr)	4000mg/litre (Artemia salina), 354 & 560mg/litre (Daphnia magna)
EC ₁₀ (Algae)	>1000mg/litre (Scenedesmus subspicatus)
EC ₁₀ (Bacteria)	435mg/litre (Pseudomonas putida)

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13. TRANSPORT REGULATIONS

Canada TDG	PIN	UN-1172
AND	Shipping Name	ethylene glycol monoethyl ether acetate
U.S.A. 49 CFR	Class	3
	Packing Group	III
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

Immediately Dangerous to Life or Health: 500 ppm

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time-Weighted Avg: 100 ppm (540 mg/cu m). Skin Designation.

NIOSH Recommendations: NIOSH recommends reducing exposure to lowest feasible concentration & preventing contact with the skin. /Glycol ethers/ Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 0.5 ppm (2.7 mg/cu m). Skin.

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 5 ppm, skin. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed three times the TLV-TWA for no more than a total of 30 min during a work day, and under no circumstances should they exceed five times the TLV-TWA, provided that the TLV-TWA is not exceeded. Biological Exposure Index: Determinant: 2-ethoxyacetic acid in urine; Sampling Time: end of shift at end of workweek; BEI: 100 mg/g creatinine.

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. Ethylene glycol monoethyl ether acetate is produced, as an intermediate or final product, by process units covered under this subpart.

FDA Requirements: Ethylene glycol monoethyl ether acetate is an indirect food additive for use only as a component of adhesives.

16. PREPARATION INFORMATION

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

*Preparation Date: **January 2004** Revision Date: **February 2007, February 2010***

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