



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Glycol Ether EE Acetate
Synonyms	2-ethoxyethyl acetate, ethylene glycol monoethyl ether acetate, EE Acetate
CAS#	111-15-9
Europe EC#	203-839-2
Product Uses	solvent, coupling agent

2. HAZARDS

Quick Guide: flammable liquid, heavy vapour may travel, distant ignition and flashback are possible; possible reproductive toxin, possible carcinogen, absorption through the skin may occur

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, F – Reactive Substance

U.S.A. – HMIS

Key:

Health – 2, Fire – 2, Reactivity – 0

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



3. COMPOSITION

	%	TWAEV / TLV mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
2-ethoxyethyl acetate	100%	5 / 27 (skin)	1910	10,250	1500

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. FIRE FIGHTING & FLAMMABILITY

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
Firefighting 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

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6. ACCIDENTAL RELEASE MEASURES

Leak Precaution dyke to control spillage and prevent environmental contamination
 Handling Spill evacuate area; then ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep, shovel & store in closed containers for recycling or disposal
 Clean-up personnel must wear impervious (butyl rubber) boots, apron & other clothing as appropriate.

7. 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. This product is a possible reproductive toxin and possible carcinogen. Avoid all contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	5ppm / 27mg/m ³ (skin)	Ontario STEL	not listed
ACGIH TLV	5ppm / 27mg/m ³ (skin)		
OSHA PEL	100ppm / 540mg/m ³ (skin)		
Ventilation	mechanical ventilation may be required to control airborne titre to regulated limits; depending on handling procedures, respirators with organic vapour cartridge should be available for all workers in the area for "escape" (<i>store respirator in airtight container ("Tupperware" or "Zip-Lock") to maintain "freshness"</i>)		
Hands	butyl rubber gloves are resistant – <i>consult supplier to confirm suitability or to recommend alternatives</i>		
Eyes	safety glasses with side shields – <i>always protect the eyes</i>		
Clothing	no special protective clothing required		

9. 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

10. REACTIVITY

Dangerously Reactive With	strong oxidising agents
Also Reactive With	strong acids or strong alkalis can provoke vigorous (even violent) hydrolysis
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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11. 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 & 5100mg/kg (rat), 2900mg/kg (♀rat), 3900mg/kg (♂rat), 1950mg/kg (rabbit), 1910mg/kg (guinea pig), 3200-6400mg/kg (mouse)
LD ₅₀ (skin)	10,300mg/kg (rabbit), 18,800, 19,300 & 19,500mg/kg (guinea pig)
LC ₅₀ (inhalation)	1530, 2120, 2245 & 3170ppm (rat), >2000ppm (rabbit – <i>no mortality</i>)

12. ECOLOGICAL INFORMATION

Bioaccumulation	rapidly eliminated (biological ½-life = 24 hours); cannot bioaccumulate
Biodegradation	biodegrades readily in the presence of oxygen; 41% in 5 days, 69% in 20 days & 97% in 14 days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; its estimated ½-life in air is 15-18 hours hydrolyses in water
Mobility in soil, water	with a ½-life of 300 days at pH 7 & 30 days at pH 8
Aquatic Toxicity	highly water soluble; moves readily in soil & water
LC ₅₀ (Fish, 96hr)	45mg/litre (Ictalurus punctatus), 41, 45, 52 & 96mg/litre (Lepomis macrochirus), 42 & 60-107mg/litre (Pimephelas promelas), 40mg/litre (Menidia beryllina)
EC ₅₀ (Crustacea, 24hr)	4000mg/litre (Artemia salina), 354-1250mg/litre (Daphnia magna – 3 tests)
EC ₁₀ (Algae)	>1000mg/litre (Scenedesmus subspicatus) – <i>this is an EC₁₀; a 10% decrease in growth rate</i>
EC ₁₀ (Bacteria)	435mg/litre (Pseudomonas putida) – <i>this is an EC₁₀; a 10% decrease in growth rate</i>

13. 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>

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14. TRANSPORT CLASSIFICATION

Canada TDG	PIN	UN – 1172
AND	Shipping Name	ethylene glycol monoethyl ether acetate
U.S.A. 49 CFR	Class & Packing Group	3 (III)
Marine Pollutant		not a marine pollutant
ERAP Required		NO

**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



Europe Classification	Toxic to Reproduction
Europe Risk Phrases by	R: 60, 61, 20/21/22, 10 – May impair fertility. May cause harm to the unborn child. Also harmful by inhalation, in contact with skin and if swallowed. Flammable.
Europe Safety Phrases	S: 53, 45 – Avoid exposure - obtain special instruction before use. In case of accident or if you feel unwell, seek medical advice immediately and show this document.

USA Regulations:

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 (BEI): 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. OTHER INFORMATION

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Data from RTECS, HSDB (Haz. Substance Data Base), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.

Preparation Date: **January 2004** Revision Date: **February 2007, February 2010, February 2013**

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