



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Glycol Ether DE
Synonyms	2-(2-ethoxyethoxy) ethanol; diethylene glycol monoethyl ether, DE, Dowanol DE, Ethyl Carbitol, and others
CAS#	111-90-0
Europe EC#	203-919-7
Product Uses	solvent in coatings, brake fluids, baking enamels, etc

2. HAZARDS

Quick Guide: combustible liquid, irritating to eyes, toxic on ingestion

Canada – WHMIS

Key:

B 3, D 2B

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



B3 – Combustible Liquid

U.S.A. – HMIS

Key:

Health – 2, Fire – 2, Reactivity – 0

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



D2B – Toxic

3. COMPOSITION

	%	TWAEV / TLV mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
2-(2-ethoxyethoxy) ethanol	100%	not listed	1920	4160	960

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	91°C / 196°F (closed cup); 96°C / 205°F (open cup)
Autoignition Temperature	204°C / 400°F
Flammable Limits	1.2% – 24% – <i>the flammable range is unusually broad</i>
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Firefighting Precautions	alcohol foam, dry chemical, CO ₂ , water fog or spray; 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 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

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.

If product is heated during handling or processing, or if a mist is created, install ventilation adequate to completely clear the workplace air, and avoid breathing product vapour. 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 should be available near the workplace.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	30ppm / 165mg/m ³	Ontario STEV	not listed
ACGIH TLV	not listed; WEEL (AIHA) 25ppm / 135mg/m ³		
OSHA PEL	not listed		
Ventilation	mechanical ventilation is probably not required unless high temperature processing is involved		
Hands	no special protective gloves required; "Tychem SL" gloves offer 8-hour resistance		
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, hygroscopic liquid with slight, pleasant fruity ether odour
Odour Threshold	0.2ppm
Vapour Pressure	0.14mmHg / 0.019kPa (25°C / 77°F)
Evaporation Rate (<i>Butyl Acetate=1</i>)	0.013 – <i>very slow</i>
Vapour Density (air = 1)	4.6
Boiling Range	202°C / 296°F
Freezing Point	-76°C / -105°F
Specific Gravity	0.990 (20/20°C)
Water Solubility	complete
Also soluble in	most organic solvents
Viscosity	0.39centipoise (25°C / 77°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Conversion Factor	1ppm = 5.48mg/m ³
Molecular Weight	134grams per mole

10. 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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11. TOXICITY

Effects, Acute Exposure

Skin Contact	little to no effect
Skin Absorption	yes; no toxic effects likely by this route – <i>toxic effects require extensive & prolonged exposure</i>
Eye Contact	may irritate
Inhalation	low vapour pressure – vapour from heated liquid or mist may irritate, and could also cause the nervous
Ingestion	system effects described below for ingestion ingestion of over 100ml may cause headache, dizziness, drowsiness, respiratory depression, metabolic acidosis – not a route of industrial exposure

Effects, Chronic Exposure

General	no chronic effect reported or expected
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)	1920, 3950-9740mg/kg (rat), 6530, 7250 & 12,400mg/kg (mouse), 3000-4970mg/kg (guinea pig), 3620 & 4450mg/kg (rabbit)
LD ₅₀ (skin)	4160, 8400 & 10,300mg/kg (rabbit), 31,700mg/kg (guinea pig), 5940mg/kg (mouse & rat)
LC ₅₀ (inhalation)	960ppm (rat)

NOTE: Oral & Skin LD₅₀ vary widely between species & between tests on the same species & may be a poor guide to human toxicity.

12. ECOLOGICAL INFORMATION

Bioaccumulation	high water solubility – Glycol Ether DE is not a bioaccumulator
Biodegradation	biodegrades readily & rapidly in the presence of oxygen; 11% & 34% in 5 days; 90% in 28 days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 7 hours
Mobility in soil, water	water soluble; moves readily & rapidly in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	13,400mg/litre (Salmo gairdneri), 2140mg/litre (Lepomis macrochirus), 20,800mg/litre (Carassius auratus), 12,900-15,200mg/litre (Gambusia affinis), 6010mg/litre (Ictalurus punctatus)
EC ₅₀ (Crustacea, 48hr)	3940-4620mg/litre (Daphnia magna), 18,800mg/litre (Tanytarsus dissimilis)
EC ₅₀ (Algæ)	no data
EC ₁₀ (Bacteria, 16hr)	4000mg/litre (Pseudomonas putida) – <i>note this is an EC₁₀, not an EC₅₀ – very slight toxic effect</i>

13. DISPOSAL

Waste Disposal	do not flush to sewer , recycle if possible; biodegradation (after dilution) in a suitable treatment facility is the preferred option; 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-not regulated for transport
	Shipping Name	not regulated for transport
	Class	not regulated for transport
	Packing Group	not regulated for transport
U.S.A. 49 CFR	PIN	NA-1993*
	Shipping Name	COMBUSTIBLE LIQUIDS N.O.S. (ethylene glycol monoethyl ether)*
	Class	3*
	Packing Group	combustible liquid*
Marine Pollutant		not a marine pollutant
ERAP Required		NO

* The flash point of Glycol Ether DE is close to the 93°C cut off for Class 3 Combustible (Part 5, above). Some US shippers classify it not regulated.

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 Harmful

Europe Risk Phrases R: 22, 36 - Harmful if swallowed. Irritating to eyes.

Europe Safety Phrases S: 46 – If swallowed, seek medical advice immediately.

Allowable Tolerances: Residues of the following chemical substances are exempted from the requirement of a tolerance when used in accordance with good manufacturing practice as ingredients in an antimicrobial pesticide formulation, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food. ... (c) The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-processing equipment and utensils. Ethanol, 2-(2-ethoxyethoxy)- is included on this list. Residues of diethylene glycol monoethyl ether are exempted from the requirement of a tolerance when used as a deactivator for formulations used before crop emerges from soil, stabilizer 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. Diethylene glycol monoethyl ether is produced, as an intermediate or final product, by process units covered under this subpart.

TSCA Requirements: Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Diethylene glycol monoethyl ether is included on this list.

FIFRA Requirements: Residues of the following chemical substances are exempted from the requirement of a tolerance when used in accordance with good manufacturing practice as ingredients in an antimicrobial pesticide formulation, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food. ... (c) The following chemical substances when used as ingredients in an antimicrobial pesticide formulation may be applied to: Food-processing equipment and utensils. Ethanol, 2-(2-ethoxyethoxy)- is included on this list. Residues of diethylene glycol monoethyl ether are exempted from the requirement of a tolerance when used as a deactivator for formulations used before crop emerges from soil, stabilizer in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

FDA Requirements: Diethylene glycol monoethyl ether 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: December 2006 Revision Date: November 2009, November 2012

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