



Safety Data Sheet

Section 01 - Identification

Product Identifier	Inhibited Ethylene Glycol
Other Means of Identification	Ucartherm
Product Use and Restrictions on Use	Antifreeze, heat transfer liquid.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
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Section 02 - Hazard Identification

GHS-Classification

Acute Toxicity-Oral	Category 4
STOT-Repeated Exposure	Category 2

Physical Hazards

No known physical hazards.

Warning

Hazards Statements

H302 – Harmful if swallowed.

H373 – May cause damage to kidneys through prolonged or repeated oral exposure.

Pictograms



Precautionary Statements

P264 – Wash hands thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.

P301 + P312 – IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330 – Rinse mouth.

P260 – Do not breathe mist, vapours or spray.

P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Ethylene Glycol	107-21-1	93-100%	
Dipotassium Phosphate	7758-11-4	1-5%	

Section 04 - First Aid Measures

Inhalation	Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek medical attention.
Skin Contact / Absorption	Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.
Eye Contact	Contact lenses should never be worn when working with this product. Flush immediately with water for at least 30 minutes. If irritation persists, seek medical attention.
Ingestion	NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim rinse mouth with water again. Seek medical attention.
Additional Information	<p>Notes to physician:</p> <p>It is estimated that the oral dose to adults is of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glyceraldehydes, glycolic acid and oxalic acid which cause an elevated anion-gap metabolic acidosis and renal tubular injury. The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, CNS depression and kidney injury. Urinalysis may show albuminuria, hematuria and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of ethylene glycol poisoning includes elimination of ethylene glycol and metabolites, correction of metabolic acidosis and prevention of kidney injury. It is essential to have immediate and follow up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continuous infusion of 5% sodium bicarbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase, ethanol is antidotal. Given in the early stages of intoxication, it blocks the formulation of nephrotoxic metabolites. A therapeutically effective blood concentration of ethanol is in the range 100 - 150 mg/dl and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and /or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood ethylene glycol concentration greater than 25 mg/dl, or compromise of renal functions.</p> <p>A more effective intravenous antidote for physician use is 4-methylpyrazole, a potent inhibitor of alcohol dehydrogenases which effectively blocks the formation of toxic metabolites of ethylene glycol. It has been used to decrease the metabolic consequences of ethylene glycol poisoning before metabolic acidosis, coma, seizures and renal failure have occurred. A generally recommended protocol is a loading dose of 15 mg/kg followed by 10 mg/kg every 12 hours for 4 doses and the 15 mg/kg every 12 hours until the ethylene glycol concentrations are below 20 mg/100ml.</p> <p>Slow intravenous infusion is required. Since 4-methylpyrazole is dialyzable, increased dosage may be necessary during hemodialysis. Additional therapeutic measures may include the administration of cofactors involved in the metabolism of ethylene glycol. Thiamine (100 mg) and pyridoxine (50 mg) should be given every six hours. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be non-cardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing, and dysphagia.</p>

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media	Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Water or foam may cause frothing. Special alcohol resistant "multipurpose" firefighting foams are recommended for use on water-soluble liquids, such as ethylene glycol.
Unsuitable Extinguishing Media	Not Available
Specific Hazards Arising From the Chemical	During a fire, irritating/toxic gases such as carbon monoxide, carbon dioxide, formaldehyde and other toxic and irritating gases or fumes and acrid smoke may be generated. Closed containers may rupture violently and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time.
Special Protective Equipment and Precautions for Fire-Fighters	Wear NIOSH-approved self-contained breathing apparatus and protective clothing.
Further Information	Not Available

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.
Environmental Precautions	Prevent materials from entering sewers or waterways.
Methods and Materials for Containment and Cleaning Up	Contain spill with earth, sand, or absorbent material which does not react with spilled material. SMALL SPILLS: Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labelled containers. Contaminated absorbent material may pose the same hazards as the spilled product. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

Section 07 - Handling and Storage

Precautions for Safe Handling	This material is a VERY TOXIC LIQUID. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
Conditions for Safe Storage	Store in a cool, ventilated area, away from heat and ignition sources. Store away from incompatible materials. Floors should be sealed to prevent absorption. Provide raised sills or ramps at doorways or create a trench which drains to a safe location.
Incompatibilities	Strong oxidizing agents, perchloric acid, strong bases, phosphorous (V) sulfide, silvered copper wires carrying DC current, strong acids.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Ethylene glycol	ACGIH	TLV-C	100mg/m ³
	OSHA	PEL-C	50ppm

Engineering Control(s)

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.
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Other	Emergency shower and eyewash should be in close proximity.
<u>Protective Equipment</u>	
Eyes/Face	No specific requirement, but it is good practice to wear chemical safety goggles.
Hand Protection	No specific requirement, but it is good practice to prevent skin contact.
Skin and Body Protection	No specific requirement, but it is good practice to prevent skin contact. No special footwear is required other than what is mandated at place of work.
Respiratory Protection	No specific guidelines are available. An approved respirator suitable for protection from dusts and mists may be adequate.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Liquid
Colour	Colourless to yellow
Odour	Slightly sweet smelling.
Odour Threshold	Not Available

Property

pH	9.5 at 50%
Melting Point/Freezing Point	-13°C
Initial Boiling Point and Boiling Range	197.6°C
Flash Point	111.1°C
Evaporation Rate	<0.01
Flammability	Not combustible, but will burn if strongly heated.
Upper Flammable Limit	21.6-22%
Lower Flammable Limit	3.2%
Vapour Pressure (mm Hg, 20°C)	0.05
Vapour Density (Air=1)	2.14
Relative Density	Not Available
Solubility(ies)	100%
Partition Coefficient: n-octanol/water	Log K _{ow} = -1.36
Auto-ignition Temperature	398°C

Decomposition Temperature	Not Available
Viscosity	16.1 mPa-sec @ 25°C
Explosive Properties	Sudden release of hot organic chemical vapours or mists from process equipment may result in ignitions without the presence of obvious ignition sources.
Specific Gravity (Water=1)	1.114
% Volatiles by Volume	96% by weight
Formula	C ₂ H ₆ O ₂
Molecular Weight	62.07

Section 10 - Stability and Reactivity

Reactivity	Not Available
Stability	Stable under normal conditions.
Possibility of Hazardous Reactions	Polymerization will not occur.
Conditions to Avoid	Temperatures above 111°C, heat, flames.
Incompatible Materials	Strong oxidizing agents, perchloric acid, strong bases, phosphorus (V) sulfide, silvered copper wires carrying DC current, strong acids.
Hazardous Decomposition Products	During a fire, irritating/toxic gases, such as carbon monoxide, carbon dioxide and other toxic and irritating gases or fumes and acrid smoke may be generated.

Section 11 - Toxicological Information

Acute Toxicity Estimate

Component	Oral LD ₅₀	Dermal LD ₅₀	Inhalation LC ₅₀
Ethylene Glycol, Inhibited	1647 mg/kg	9294 mg/kg	2930 mg/m ³

This product has been classified in accordance with the Hazardous Products Regulations using ATE formula documented in the GHS standard.

Chronic Toxicity – Carcinogenicity

Component	IARC
Ethylene Glycol, Inhibited	Not considered to be carcinogenic (IARC and ACGIH).

Skin Corrosion/Irritation Non-irritating or a very mild irritant. Ethylene glycol is absorbed through the skin but significant harmful effects are not expected by this route of exposure.

Ingestion May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure, pulmonary edema, and severe kidney damage may develop. May be fatal if swallowed, lethal dose in adult humans for ethylene glycol is approximately 100 mL.

Inhalation At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

Serious Eye Damage/Irritation	Vapours or mists may cause eye irritation. Corneal injury is unlikely.
Respiratory or Skin Sensitization	Repeated skin contact may cause sensitization with the development of allergic contact dermatitis.
Germ Cell Mutagenicity	The available information does not indicate that ethylene glycol is mutagenic.
Reproductive Toxicity	Ethylene glycol induces developmental effects in rats and mice by all routes of exposure, although at doses greater than those associated with renal effects in male rats. Ethylene glycol is teratogenic, inducing primarily skeletal and external malformations, sometimes at doses less than those that are maternally toxic, with mice being more sensitive than rats. Reproductive studies with ethylene glycol show that in repeated dose toxicity studies, no evidence of an adverse impact on reproductive organs was observed. In special studies, including a three generation study in rats and continuous breeding protocols in mice, evidence of reproductive effects have been restricted to mice (but not rabbits or rats) exposed to doses considerably higher than those associated with developmental effects in this species or renal effects in rats. Passes through the placental barrier in animals and is embryotoxic. Proven teratogen in humans.
STOT-Single Exposure	The substance may cause effects on the kidneys and central nervous system. This may result in renal failure and brain injury. Exposure could cause lowering of consciousness.
STOT-Repeated Exposure	Repeated inhalation of ethylene glycol mist may produce signs of central nervous system involvement, particularly dizziness and nystagmus. May aggravate existing kidney disease. Repeated or prolonged exposure may produce target organ damage. It may cause general deterioration in health by accumulating in one or more human organs.
Aspiration Hazard	Not likely to be an aspiration hazard based on physical properties.
Synergistic Materials	Not Available

Section 12 – Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Ethylene Glycol	Not Available	LC ₅₀ (Lepomis macrochirus, 96hr): 10000mg/L LC ₅₀ (Rainbow trout, 96hr): 18500mg/L	EC ₅₀ (Daphnia magna, 24hr): 2500mg/L
Biodegradability	Ultimately biodegradable.		
Bioaccumulation	Not Available		
Mobility	Given its very low Henry's constant; volatilization from natural bodies of water or moist soil is not expected to be an important fate process. Potential for mobility in soil is very high.		
Other Adverse Effects	Not Available		

Section 13 – Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 – Transport Information

UN Number	Not Regulated
UN Proper Shipping Name	Not Regulated
Transport Hazard Class(es)	Not Regulated

Packaging Group	Not Regulated
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available
Transport in Bulk	Not Available

TDG

Other Secure containers (full and/or empty) with suitable hold down devices during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 – Other Information

Preparation Date August 24, 2015

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution[®] initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

- 1) CHEMINFO
- 2) eChemPortal
- 3) TOXNET
- 4) Transportation of Dangerous Goods Canada
- 5) HSDB
- 6) ECHA
- 7) PAN

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