BEBBINGTON INDUTRIES SAFETY DATA SHEET
ETHYLENE GLYCOL 50 % IN WATER

1. IDENTIFICATION

Product identifier

Product Name ETHYLENE GLYCOL 50 % IN WATER

Recommended use of the chemical and restrictions on use

Recommended Use Antifreeze. Do not use if there is the possibility of incidental contact to food and/or potable water.

Restricted Uses No information available

Supplier Identifier

Bebbington Industries
44 Wright Avenue
Dartmouth
Nova Scotia B3B 1G6
Canada

Telephone: 1-902-468-8180

2. HAZARD IDENTIFICATION

Hazardous Classification of the substance or mixture

Acute toxicity - Oral	Category 4
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Hazard pictograms

Signal Word: Warning Hazard statements
Harmful if swallowed
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray

Response

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth
Do NOT induce vomiting

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Disposal
Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations

Other Information

Unknown acute toxicity No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Volume %	7758-11-4
Ethylene Glycol	107-21-1	50 %	Ethylene Glycol
Water	7732-18-5	50 %	Water

0 -

4. FIRST AID

Description of first aid measures

General advice
Show this safety data sheet to the doctor in attendance.

Inhalation
Remove to fresh air.

Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact
Wash skin with soap and water.

Ingestion
Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

Most important symptoms and effects, both acute and delayed:
Corneal injury is unlikely. Massive contact with damaged skin or if material sufficiently hot to burn skin may result in absorption of potential lethal amounts. May cause slight eye irritation Prolonged contact may cause skin irritation with local redness. May cause liver and kidney damage. May cause damage to nasal and respiratory passages. At room temperature, vapors are minimal due to low vapor pressure. If material is heated or mist is produced, concentrations may be attained that are sufficient to cause irritation and other effects. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. Swallowing may result in severe effects, even death. The lethal dose in adult humans for ethylene glycol is approximately 3 ounces (100 ml) (1/3 cup). May cause nausea or vomiting. May cause abdominal discomfort or diarrhea. Repeated contact may cause skin irritation with local redness. Brief contact is essentially non-irritating to skin. Vapor or mist may cause eye irritation.

Indication of any immediate medical attention and special treatment needed:

Note to physicians
Treatment based on sound judgment of physician and individual reactions of patient. It is estimated that the oral dose to adults is of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenate 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.

A more effective intravenous antidote for physician use in 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.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. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Water fog or fine spray, carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream, which will spread fire.

Specific hazards arising from the substance or mixture
Use water spray to cool fire-exposed containers and structures. Isolate and restrict area access. Move containers from fire area if you can do it without risk. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Container may rupture from gas generation in a fire situation. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Fight fire from a safe distance and from a protected location. Consider use of unmanned hose holder or monitor nozzles. NEVER use a water jet directly on the fire because it may spread the fire to a larger area.

Hazardous combustion products
Alcohols. Ethers. Aldehydes. Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to:.

Special protective equipment for fire-fighters
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation.

Environmental precautions

See Section 12 for additional Ecological Information.

Methods and materials for containment and cleaning up

Prevent further leakage or spillage if safe to do so.

7. HANDLING AND STORAGE

Precautions for safe handling

For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperature possibly resulting in spontaneous combustion.

Conditions for safe storage, including any incompatibilities

Store in accordance with good industrial practices. Keep containers tightly closed. Store in original container. Do not store in: galvanized steel. Store in carbon steel, stainless steel.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical Name	Alberta OEL	British Columbia OEL	Ontario	Quebec OEL	Exposure Limit - ACGIH	Immediately Dangerous to Life or Health - IDLH
Ethylene Glycol 107-21-1	Ceiling: 100 mg/m^3	TWA: 10 mg/m^3 STEL: 20 mg/m^3 Ceiling: 100 mg/m^3 Ceiling: 50 ppm	CEV: 100 mg/m^3	Ceiling: 50 ppm Ceiling: 127 mg/m^3	100 mg/m^3 Ceiling	Not available
Water 7732-18-5	Not available	Not available	Not available	Not available	Not available	Not available

Consult local authorities for recommended exposure limits

Appropriate engineering controls

Engineering controls

In confined areas, local and general ventilation should be provided to maintain airborne concentrations below permissible exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection

Safety glasses or goggles. If exposure causes eye discomfort, use a full-face respirator.

Hand protection
Nitrile gloves. Neoprene gloves. Ethyl Vinyl Alcohol Laminate (EVAL). Natural rubber gloves. Polyvinylchloride (PVC) gloves. Polyethylene gloves. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials as well as the instructions/specifications provided by the glove supplier. Use gloves chemically resistant to this material, examples of preferred glove barrier materials include:. Avoid gloves made of:. Polyvinyl alcohol (PVA). When material is heated, wear gloves to protect against thermal burns.

Skin and body protection
Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance. When handling hot material, protect skin from thermal burns as well as from skin absorption.

Respiratory protection
Respiratory protection is not usually needed unless product is heated or misted. If spraying or misting occurs use a NIOSH approved air purifying respirator.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid
Color	Colorless
Odor	Characteristic
Odor threshold	No information available
pH	No data available
Melting point / freezing point	No data available
Initial boiling point/boiling range	No data available
Flash point	No data available
Evaporation rate	<0.5 Estimated
Flammability (solid, gas)	No data available
Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available
Vapor pressure	2.2 mmHg @ 20°C
Relative vapor density	>1.0
Relative density	1.07 @ 20°C 1000
Water solubility	(RBT)
Solubility in other solvents	No data available
Partition coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Kinematic viscosity	No data available
Dynamic viscosity	No data available
Explosive properties	No information available.
Oxidizing properties	No information available.
Molecular weight	No information available
VOC Percentage Volatility	No information available
Liquid Density	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity/Chemical Stability
Stable

Possibility of hazardous reactions
Not available.

Hazardous polymerization
Will not occur.

Conditions to avoid
Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation
Massive contact with damaged skin or if material sufficiently hot to burn skin may result in absorption of potential lethal amounts. Prolonged contact may cause skin irritation with local redness. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated contact may cause skin irritation with local redness. Brief contact is essentially non-irritating to skin.

Serious eye damage/eye irritation
Corneal injury is unlikely. May cause slight eye irritation. Vapor or mist may cause eye irritation.

Respiratory or skin sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity

No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Ethylene Glycol 107-21-1	Not available	Not available	Not available	Not available
Water 7732-18-5	Not available	Not available	Not available	Not available

Reproductive toxicity
Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies. Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals. Specifically, growth retardation and decreased litter size in rats and mice and decreased mating frequency in mice were observed.

Specific target organ systemic toxicity - single exposure
No information available.

Specific target organ systemic toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure if swallowed.

Aspiration hazard
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Ecotoxicity - Freshwater Algae Data	Ecotoxicity - Fish Species Data	Toxicity to microorganisms	Crustacea
Ethylene Glycol	6500 - 13000 mg/L EC50	14 - 18 mL/L LC50	Not available	EC50: =46300mg/L (48h,
107-21-1	Pseudokirchneriella subcapitata 96 h	(Oncorhynchus mykiss) 96 h static 40000 - 60000 mg/L LC50 (Pimephales promelas) 96 h static 16000 mg/L LC50 (Poecilia reticulata) 96 h static 27540 mg/L LC50 (Lepomis macrochirus) 96 h static 40761 mg/L LC50 (Oncorhynchus mykiss) 96 h static 41000 mg/L LC50 (Oncorhynchus mykiss) 96 h		Daphnia magna)
Water 7732-18-5	Not available	Not available	Not available	Not available

Persistence and degradability No information available.

Bioaccumulation No information available.

Component Information

Chemical Name	Partition coefficient
Ethylene Glycol 107-21-1	-1.93
Water 7732-18-5	Not available

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

Do not reuse empty containers.

14. TRANSPORT INFORMATION

Not regulated under TDG

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Regulatory Rules

Chemical Name	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Ethylene Glycol - 107-21-1	Not Listed	Listed	Listed
Water - 7732-18-5	Not Listed	Not Listed	Not Listed

International Inventories

TSCA Complies **DSL/NDSL** Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

16. OTHER INFORMATION

Prepared by **Bebbington Industries, January 2024**

DISCLAIMER:

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. BEBBINGTON INDUSTRIES SHALL NOT BE HELD LIABLE FOR ANY DAMAGE OR INJURY RESULTING FROM HANDLING OF, OR FROM CONTACT WITH THE ABOVE PRODUCT. ALL PERSONS USING THIS PRODUCT SHOULD BE WHMIS TRAINED.