

# MONO-ETHYLENE GLYCOL

## SAFETY DATA SHEET

### SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	Ethylene Glycol
<b>General or Generic ID:</b>	1,2-ethanediol, mono-ethylene glycol.
<b>Manufacturer's Name (same as Supplier):</b>	Inland Technologies International Ltd. P.O. Box 253, 14 Queen Street Truro, Nova Scotia B2N 5C1 Canada Phone: (877) 633-5263
<b>Technical Contact:</b>	amcleod@inlandgroup.ca
<b>Marketing Contact:</b>	bpace@inlandgroup.ca
<b>Recommended Use:</b>	De-icing/ Anti-icing applications, energy production, antifreeze.
<b>Restricted Use:</b>	There are no uses advised against.
<b>Emergency Telephone:</b>	CANUTEC: (888) 226-8832 (US & Canada)

### SECTION 2. HAZARDS IDENTIFICATION

**Hazard Classification:**

<b>Health Hazards:</b>	<i>Acute Toxicity</i>	Category 4
	<i>Specific Target Organ Toxicity – Single Exposure (Oral)</i> <i>(Target Organs – Central Nervous System)</i>	Category 3
	<i>Specific Target Organ Toxicity – Repeated Exposure</i> <i>(Target Organs – Kidney, Liver)</i>	Category 2

**Label Elements:**

**Hazard Symbol:**



**Signal Word:**

Warning

**Hazard Statement:**

Harmful if swallowed. May cause drowsiness or dizziness. May cause damage to organs (kidney) through prolonged or repeated exposure.

**Precautionary Statements:**

**Prevention:** Do not breathe dust/mist/vapours/spray. Thoroughly wash hands and any exposed skin with plenty of water and soap after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area.  
**Response:** IF EXPOSED: Call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.  
**Storage:** Keep container tightly closed. Store in a well-ventilated place. Store in a dry place. Secure all containers.  
**Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.



### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical Identity:</u>	<u>Common Name and Synonyms:</u>	<u>CAS Number:</u>	<u>Content in Percent (%):</u>
Ethylene Glycol	1,2-Ethanediol, mono-ethylene	107-21-1	97%–100%

### SECTION 4. FIRST AID MEASURES

<b>General Information:</b>	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in advance. Remove contaminated clothing.
<b>Ingestion:</b>	Call a physician or poison control center immediately. Do NOT induce vomiting without advice from poison control center. Never give liquid to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into lungs. If person is fully conscious, give 8 ounces (250 mL) of water. If medical advice is delayed and if an adult has swallowed several ounces (60 mL or more) of ethylene glycol, give 3–4 ounces (90–120 mL) of hard liquor such as 80-proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounces (1.5 teaspoons) for each 10 pounds of body weight, or 2 mL per kilogram of body weight.
<b>Inhalation:</b>	Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
<b>Skin Contact:</b>	Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing.
<b>Eye Contact:</b>	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Seek medical attention.

#### Most Important Symptoms/Effects, Acute and Delayed:

**Symptoms:** May irritate eyes. Breathing difficulties. Kidney damage.

#### Indication of Immediate Medical Attention and Special Treatment Needed:

**Treatment and Notes to Physician:** If several ounces (more than 60 mL) of ethylene glycol has been ingested, early administration of ethanol may counteract the effects of ethylene glycol, such as metabolic acidosis and renal damage. Hemodialysis is the most effective means of removing ethylene glycol and its metabolites from the body. Consider hemodialysis or peritoneal dialysis and thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100–150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG) intoxication, if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum EG is undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## SECTION 5. FIRE FIGHTING MEASURES

<b>General Fire Hazards:</b>	In case of fire and/or explosion, do not breathe fumes.
<b>Extinguishing Media:</b>	<i><b>Suitable Extinguishing Media:</b></i> Water spray, alcohol-resistant foam, dry powder, gaseous extinguishing media or carbon dioxide. <i><b>Unsuitable Extinguishing Media:</b></i> Direct water spray will spread fire.
<b>Special Hazards Arising from the Substance or Mixture:</b>	Thermal decomposition may produce irritating, corrosive and/or toxic gases.
<b>Special Protective Equipment and Precautions for Firefighters:</b>	<i><b>Special Firefighting Procedures:</b></i> Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out. <i><b>Special Protective Equipment for Firefighters:</b></i> Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions, Protective Equipment and Emergency Procedures:</b>	Use personal protective equipment. Avoid breathing vapours, mist or gas. Keep unauthorized personnel away. Keep up-wind. Ventilate closed spaces before entering them.
<b>Methods and Material for Containment and Cleaning:</b>	Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.
<b>Notification Procedures:</b>	Dike for later disposal. Prevent entry into waterways, sewers, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.
<b>Environmental Precautions:</b>	Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, watercourses or onto the ground.

## SECTION 7. HANDLING AND STORAGE

<b>Precautions for Safe Handling:</b>	Use personal protective equipment as required. Do not breathe mist or vapour. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash hands thoroughly after handling. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.
<b>Conditions for Safe Storage (including any incompatibilities):</b>	Keep container tightly closed. Store in well-ventilated place. Store in a dry place. Store in a locked or controlled access area. Hygroscopic.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters:

### Occupational Exposure Limits:

<u>Chemical Identity:</u>	<u>Type:</u>	<u>Exposure Limit Values:</u>		<u>Source:</u>
Ethylene Glycol	Ceiling	50 PPM	125 mg/m <sup>3</sup>	US. OSHA VPEL
	Ceiling		100 mg/m <sup>3</sup>	ACGIH TLV
Ethylene Glycol	Ceiling	50 PPM	127 mg/m <sup>3</sup>	Quebec
Ethylene Glycol	CEV		100 mg/m <sup>3</sup>	Ontario TWAEV

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ethylene Glycol	TWA	10 mg/m <sup>3</sup>	British Columbia OEL
	STEL	20 mg/m <sup>3</sup>	
	Ceiling	100 mg/m <sup>3</sup>	

**Engineering Controls:** Maintain sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLVs (threshold limit value).

### Exposure Controls/Individual Protection Measures, Such as Personal Protective Equipment:

**General Information:** Good general ventilation (typically 10 air exchanges per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Wash contaminated clothing immediately.

**Respiratory Protection:** In case of inadequate ventilation use suitable respirator. Chemical respirator with organic vapour cartridge, full facepiece, dust and mist filter.

**Eye/Face Protection:** Wear safety glasses with side shields (or goggles).

**Skin Protection:** *Hand:* Chemical resistant gloves. Use proper glove removal technique to avoid skin contact. Dispose of contaminated gloves in accordance with applicable laws.

*Other:* Wear suitable protective clothing.

**Hygiene Measures:** Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Avoid contact with eyes, skin and clothing.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	<i>Physical State:</i> Liquid <i>Form:</i> Liquid <i>Colour:</i> Clear (colourless)
<b>Odour:</b>	Odourless
<b>Odour Threshold:</b>	No data available.
<b>pH:</b>	5.5–7.5
<b>Melting Point/Freezing Point:</b>	-13 °C (8.6 °F)
<b>Initial Boiling Point and Boiling Range:</b>	196–198 °C (384.8–388.4 °F)
<b>Flash Point:</b>	111 °C (231.8 °F), Method: DIN 51758
<b>Evaporation Rate:</b>	1
<b>Flammability (solid/gas):</b>	Not flammable.
<b>Upper/Lower Limit on Flammability or Explosive Limits:</b>	<i>Flammability Limit</i> – upper (%): 15.3 %(V) <i>Flammability Limit</i> – lower (%): 3.2 %(V)
<b>Vapor Pressure:</b>	0.12 mmHg @ 20 °C
<b>Vapor Density (AIR = 1):</b>	2.14
<b>Relative Density:</b>	1.11 (20 °C)

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Solubility:</b>	<i>Solubility in Water:</i> Miscible with water. <i>Solubility (other):</i> No data available.
<b>Partition Coefficient (n-octanol/water):</b>	-1.36 (23 °C)
<b>Auto-ignition Temperature:</b>	413 °C (775.4 °F)
<b>Decomposition Temperature:</b>	>500 °C
<b>Viscosity (20 °C):</b>	21 cP at 20 °C
<b>Other Information:</b>	<i>Molecular Weight:</i> 62.06 g/mol (C <sub>2</sub> H <sub>6</sub> O <sub>2</sub> )

## SECTION 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	No dangerous reactions known under conditions of normal use.
<b>Chemical Stability:</b>	Hygroscopic
<b>Possibility of Hazardous Reactions:</b>	Hazardous polymerization does not occur.
<b>Conditions to Avoid:</b>	Excessive heat. Contact with incompatible materials. Exposure to moist air or water.
<b>Incompatible Materials:</b>	Strong oxidizing agents. Strong acids, strong bases, aldehydes. Aluminum.
<b>Hazardous Decomposition Products:</b>	Thermal decomposition may release oxides of carbon.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on Likely Routes of Exposure:

<b>Ingestion:</b>	Harmful if swallowed.
<b>Inhalation:</b>	Spray mist may irritate the respiratory system.
<b>Skin Contact:</b>	May cause irritation.
<b>Eye Contact:</b>	Causes serious eye irritation.

### Information on Toxicological Effects:

#### Acute Toxicity:

Oral LD mg/kg	Oral LD <sub>50</sub> mg/kg	Skin LD <sub>50</sub> mg/kg	Inhalation Aerosol LC <sub>50</sub> mg/L/6hr
1,600, Human	4,700, Rat	10,626, Rabbit	>2.5, Rat

#### Classification:

#### **Acute Toxicity:**

#### Hazard Description:

**Oral:** Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 100 mL (3 oz.)) has caused death in humans. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure.

**Dermal:** Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts.

## SECTION 11. TOXICOLOGICAL INFORMATION

	Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.
<b>Repeated Dose Toxicity:</b>	No data available.
<b>Skin Corrosion/Irritation:</b>	Rabbit – no skin irritation.
<b>Serious Eye Damage/Eye Irritation:</b>	Rabbit – mild eye irritation, 24 h.
<b>Respiratory or Skin Sensitization:</b>	Not a skin sensitizer.
<b>Carcinogenicity:</b>	This substance has no evidence of carcinogenic properties.
<b>Germ Cell Mutagenicity:</b>	No data available.
<b>Teratogenicity:</b>	Laboratory experiments have shown teratogenic effects.
<b>Reproductive Toxicity:</b>	Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.
<b>Specific Target Organ Toxicity (single exposure):</b>	Central nervous system.
<b>Specific Target Organ Toxicity (repeated exposure):</b>	Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the kidney and liver.
<b>Aspiration Hazard:</b>	Not classified.
<b>Other Effects:</b>	None known.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity:

#### Acute Hazards to the Aquatic Environment – Ethylene Glycol

<b>Fish:</b>	LC <sub>50</sub> Poecilia reticulata, 96 h: 16,000 mg/L LC <sub>50</sub> Pimephales promelas, 96 h: 40,000–60,000 mg/L LC <sub>50</sub> Lepomis macrochirus, 96 h: 27,540 mg/L
<b>Aquatic Invertebrates:</b>	EC <sub>50</sub> Daphnia magna (Water Flea), 48 h: 46,300 mg/L

### Chronic Hazards to the Aquatic Environment:

<b>Fish:</b>	No observed effect concentration (7 d.), Pimephales promelas: 15,380 mg/L
<b>Aquatic Invertebrates:</b>	No observed effect concentration (7 d.), Ceriodaphnia sp.: 8,590 mg/L
<b>Toxicity to Aquatic Plants:</b>	EC <sub>50</sub> , Selenastrum capricornutum, 96 h: 6,500–13,000 mg/L (growth rate)

### Persistence and Degradability:

<b>Biodegradation:</b>	Persistence is unlikely based on information available. Readily biodegradable (according to OECD criteria).
<b>Mobility in Soil:</b>	The product is water soluble and may spread in water systems.
<b>Other Adverse Effects:</b>	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### SECTION 13. DISPOSAL CONSIDERATION

**Disposal Instructions:** Discharge, treatment, or disposal may be subject to national, provincial, or local laws.  
**Contaminated Packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied.

### SECTION 14. TRANSPORT INFORMATION

**Canadian Transportation of Dangerous Goods Act:** Not regulated.  
**US DOT:** *Proper Shipping Name:* Other regulated substances, liquid, N.O.S. (Ethylene glycol)  
*UN Number:* NA 3082  
*Class:* 9  
*Packing Group:* III  
**IMDG:** Not regulated.  
**IATA:** Not regulated.

### SECTION 15. REGULATORY INFORMATION

#### Canadian Regulations:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

**WHMIS Classification – Ethylene Glycol:** D2B – Toxic material causing other toxic effects (teratogen).  
D2A – Very toxic material causing other toxic effects (chronic toxicity).

#### United States Federal Regulations:

**Toxic Substance Control Act (TSCA) Status:** The intentional ingredients of this product are listed.  
**CERCLA RQ – 40 CFR 302.4(a):** Ethylene glycol. Reportable quantity for release: 5,000 lb.  
**CERCLA RQ – 40 CFR 302.4(b):** Not Applicable.  
**SARA 313 Components – 40 CFR 355:** None  
**Section 311/312 Hazard Class – 40 CFR 370.2:** *Fire:* No  
*Pressure Generating:* No  
*Reactive:* No  
*Immediate (Acute):* Yes  
*Delayed (Chronic):* Yes

**SARA 313 Components – 40 CFR 372.65:**

<u>Section 313 Component(s):</u>	<u>CAS Number:</u>	<u>Percent (%):</u>
Ethylene Glycol	107-21-1	99%

#### State and Local Regulations:

**California Proposition 65:** None  
**New Jersey RTK Label Information:** Ethylene glycol, CAS 107-21-1  
**Pennsylvania RTK Label Information:** Ethylene glycol, CAS 107-21-1  
**Massachusetts RTK Label Information:** Ethylene glycol, CAS 107-21-1

#### International Regulations:

**Inventory Status:** Not determined.

**SECTION 16. OTHER INFORMATION**

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

**Acronyms:**

ACGIH	American Conference of Governmental Industrial Hygienists
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
mg/m <sup>3</sup>	Milligrams per Cubic Meter
N/A	Not Applicable
NTP	National Toxicology Program
°C	Degree Celsius
°F	Degree Fahrenheit
OSHA	Occupational Safety and Health Administration
PEL	OSHA Permissible Exposure Limit
ppm	Parts Per Million
STEL	Short Term Exposure Limit
TLV	ACGIH Threshold Limit Value
TWA	Time Weighted Average
UEL	Upper Explosive Limit
UN	United Nations

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