COMET CHEMICAL COMPANY LTD.

Comet Chemical Company Ltd.
3463 Thomas Street
Innisfill, ON, Canada, L9S 3W4
Telephone: (705) 436 5580

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SECTION 1. IDENTIFICATION

Product identifier used on the label
: **Triethylene Glycol**

Product Code(s) : None reported.

Recommended use of the chemical and restrictions on use
: Heat transfer medium;Industrial use
Use pattern: Professional Use Only
Recommended restrictions None known.

Chemical family : Glycols

Name, address, and telephone number of the supplier:

Comet Chemical Company Ltd.

3463 Thomas Street
Innisfill, ON, Canada
L9S 3W4

Supplier's Telephone # : 705-436-5580

24 Hr. Emergency Tel # : TERRRAPURE ENVIRONMENTAL : 800-567-7455

Name, address, and telephone number of the manufacturer:

Refer to supplier

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear colourless liquid. Odorless.

This material is not classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Label elements

Signal Word

None required.

Hazard statement(s)

None required.

Precautionary statement(s)

None required.

Other hazards

Other hazards which do not result in classification: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.May be mildly irritating to skin, eyes and respiratory system.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance

Chemical name	Common name and synonyms	CAS #	Concentration (% by weight)
TRIETHYLENE GLYCOL	2,2-(1,2-ethanediylbis(oxy)) bis-ethanol; Triglycol; TEG	112-27-6	**100.00**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

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Ingestion : Do NOT induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Never give anything by mouth to an unconscious person. Call a physician.

Inhalation : If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Obtain medical attention if symptoms develop and persist.

Skin contact : Wash off immediately with plenty of water. Remove and wash contaminated clothing before re-use. If irritation or symptoms develop, seek medical attention.

Eye contact : Immediately flush eyes with running water for at least 5 to 10 minutes. If irritation persists, seek prompt medical attention.

Most important symptoms and effects, both acute and delayed

: May cause mild eye irritation. Symptoms may include stinging and tearing. May cause mild skin irritation. Symptoms may include mild redness and swelling. May cause respiratory irritation. Symptoms may include upper respiratory irritation, coughing and breathing difficulties. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Indication of any immediate medical attention and special treatment needed

: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

Unsuitable extinguishing media

: Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability

: Burning may produce irritating, toxic and obnoxious fumes.

Flammability classification (OSHA 29 CFR 1910.106)

: Not flammable.

Hazardous combustion products

: Carbon oxides; Phosphorus oxides.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Special fire-fighting procedures

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Wear suitable protective equipment. Refer to protective measures listed in sections 7 and 8. Restrict access to area until completion of clean-up.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

Methods and material for containment and cleaning up

: Ventilate area of release. Stop spill or leak at source if safely possible. Dike for water control. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13).

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Special spill response procedures

: Contact appropriate local and provincial environmental authorities for assistance and/or reporting requirements.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Use only in well-ventilated areas. Wear suitable protective equipment during handling. Avoid breathing vapours or mists. Avoid contact with eyes, skin and clothing. Keep away from extreme heat and flame. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling.

Conditions for safe storage : Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Store away from incompatible materials. Store below 38°C / 100.4°F in a cool, dry, well-ventilated place away form sunlight. No smoking in the area. Inspect periodically for damage or leaks. Protect from freezing.

Incompatible materials : Strong oxidizers (e.g. Chlorine, Peroxides, etc.).

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
TRIETHYLENE GLYCOL	N/Av	N/Av	N/Av	N/Av

Exposure controls

Ventilation and engineering measures

: Use in a well-ventilated area. Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection : If airbourne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Advice should be sought from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

Skin protection : Gloves impervious to the material are recommended. Advice should be sought from glove suppliers.

Eye / face protection : Chemical goggles are recommended when there is a potential for splashing.

Other protective equipment : Wear sufficient clothing to prevent skin contact. Depending on conditions of use, an impervious apron should be worn. An eyewash station and safety shower should be made available in the immediate working area.

General hygiene considerations

: Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. Wash contaminated clothing before reuse. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear colourless liquid.

Odour : Odorless.

Odour threshold : N/Av

pH : N/Av

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Melting/Freezing point : - 7°C (19.4°F)
Initial boiling point and boiling range
: 286°C (546.8°F)
Flash point : 177°C (350.6°F)
Flashpoint (Method) : closed cup
Evaporation rate (BuAe = 1) : <0.001
Flammability (solid, gas) : Not applicable.
Lower flammable limit (% by vol.)
: 0.9%
Upper flammable limit (% by vol.)
: 9.2%
Oxidizing properties : None known.
Explosive properties : Not explosive
Vapour pressure : <0.01
Vapour density : 5.2
Relative density / Specific gravity
: 1.05-1.23
Solubility in water : Soluble.
Material is hygroscopic and may absorb moisture from air.
Other solubility(ies) : Not available.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution
: <-1.2
Auto-ignition temperature : 371.11°C (700°F)
Decomposition temperature : Not available.
Viscosity : 48 cPs @ 25°C
Volatiles (% by weight) : Not available.
Volatile organic Compounds (VOC's)
: N/Av
Absolute pressure of container
: N/Ap
Flame projection length : N/Ap
Other physical/chemical comments
: None known or reported by the manufacturer.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive.
Chemical stability : Material is stable under normal conditions. Material is hygroscopic and may absorb moisture from air.
Possibility of hazardous reactions
: Hazardous polymerization does not occur.
Conditions to avoid : Avoid excessive heat, sparks and open flame. Avoid contact with incompatible materials. Do not use in areas without adequate ventilation. Keep from freezing. Keep containers closed when not in use.
Incompatible materials : Oxidizing agents; Acids.
Hazardous decomposition products
: None known, refer to hazardous combustion products in Section 5.

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SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES
Routes of entry skin & eye : YES
Routes of entry Ingestion : YES
Routes of exposure skin absorption : NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation : If product is heated or mists are formed, inhalation may cause irritation to the nose, throat and respiratory tract.

Sign and symptoms ingestion : Ingestion may irritate digestive tract and cause nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Sign and symptoms skin : Direct skin contact may result in little or no irritation.

Sign and symptoms eyes : May cause mild transient irritation.

Potential Chronic Health Effects : Prolonged or repeated contact may cause drying, cracking and defatting of the skin.

Mutagenicity : Not expected to be mutagenic in humans.

Carcinogenicity : No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

Reproductive effects & Teratogenicity : Not expected to cause reproductive effects.

Sensitization to material : Not expected to be a skin or respiratory sensitizer.

Specific target organ effects : Target Organs::Eyes, skin, respiratory system, digestive system, central nervous system.

This material is not classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Medical conditions aggravated by overexposure : None known.

Synergistic materials : Not available.

Toxicological data : See below for individual ingredient acute toxicity data.

	LC_{50}(4hr)	LD_{50}	
Chemical name	inh, rat	(Oral, rat)	(Rabbit, dermal)
TRIETHYLENE GLYCOL	> 5.0 mg/L (aerosol) (No mortality)	9500 - 22 060 mg/kg	> 18 000 mg/kg

Other important toxicological hazards : None known.

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : Not expected to be harmful to aquatic organisms. Do not allow material to contaminate ground water system. See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
TRIETHYLENE GLYCOL	112-27-6	69 800 mg/L (Fathead minnow)	> 1500 mg/L/28-day Atlantic silverside (Menidia menidia)	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
TRIETHYLENE GLYCOL	112-27-6	39 000 mg/L (Daphnia magna)	> 15 000 mg/L	None.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
TRIETHYLENE GLYCOL	112-27-6	N/Av	N/Av	None.

Persistence and degradability
: Readily biodegradable

Bioaccumulation potential : Not expected to bioaccumulate.

Components	Partition coefficient n-octanol/water (log Kow)	Bioconcentration factor (BCF)

Mobility in soil : High water solubility indicates a high mobility in soil.

Other Adverse Environmental effects
: No information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle waste according to recommendations in Section 7.

Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations.

RCRA : Under the RCRA, it is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, provincial and federal environmental agencies.

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SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	None.	Not regulated.	not regulated	none	
49CFR/DOT Additional information	None.				
TDG	None.	Not regulated.	Not regulated	none	
TDG Additional information	None.				

Special precautions for user : None known or reported by the manufacturer.
Environmental hazards : This substance does not meet the criteria for an environmentally hazardous substance according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
: Not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
TRIETHYLENE GLYCOL	112-27-6	Yes	None.	None.	No	N/Ap

SARA TITLE III: Sec. 311 and 312 SDS Requirements, 40 CFR 370 Hazard Classes: Not a hazard under normal conditions of use. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
TRIETHYLENE GLYCOL	112-27-6	No	N/Ap	No	No	No	No	Yes	Yes

Canadian Information:

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WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.
Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
TRIETHYLENE GLYCOL	112-27-6	203-953-2	Present	Present	(2)-429	KE-13201	Present	May be used as a single component chemical under an appropriate group standard

SECTION 16. OTHER INFORMATION

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DOT: Department of Transportation
EPA: Environmental Protection Agency
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
Inh: Inhalation
LC: Lethal Concentration
LD: Lethal Dose
MN: Minnesota
N/Ap: Not Applicable
N/Av: Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TLV: Threshold Limit Values
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

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References : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2016
2. International Agency for Research on Cancer Monographs, searched 2016
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2016(Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - 2016 version.
6. California Proposition 65 List - 2016 version.
7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal,2016.

Preparation Date (mm/dd/yyyy) : 07/28/2016

Other special considerations for handling : Provide adequate information, instruction and training for operators.

Prepared for: Comet Chemical Company Ltd. 3463 Thomas Street Innisfill, ON L9S 3W4 Information (M-F 8:00-5:00): 705-436-5580 www.cometchemical.com	COMET COMET CHEMICAL COMPANY LTD.
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