

Monoethanolamine

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### SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Monoethanolamine**

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

: Reagent; Chemical intermediate.  
Use pattern: Professional use only  
Restriction on use: None known

Chemical family : Carboxylic acid

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. Ammonia odour.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification :

Acute toxicity, oral - Category 4

Skin Corrosion/Irritation - Category 1

Eye Damage/Irritation - Category 1

Carcinogen - Category 2

Specific Target Organ Toxicity, Single Exposure -Category 3 (respiratory)

Label elements

Hazard pictogram(s)



Signal Word

**DANGER!**

Hazard statement(s)

Harmful if swallowed.

Causes severe skin burns and eye damage.

May cause respiratory irritation.

Suspected of causing cancer.



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*Precautionary statement(s)*

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Do not breathe the mist or vapor.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/clothing and eye/face protection.  
If exposed or concerned: Get medical advice/attention.

If swallowed: Rinse mouth. Do not induce vomiting.  
Call a POISON CENTER or doctor/physician if you feel unwell.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
Wash contaminated clothing before reuse.  
If inhaled: Remove person to fresh air and keep comfortable for breathing.  
Immediately 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.  
Continue rinsing.  
Immediately call a POISON CENTER or doctor/physician.

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

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other hazards**

Other hazards which do not result in classification:  
Ingestion may cause severe irritation to the mouth, throat and stomach. May be corrosive to metals. Contact with most metals will generate flammable hydrogen gas.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance with impurities

<u>Chemical name</u>	<u>Common name and synonyms</u>	<u>CAS #</u>	<u>Concentration</u>
Monoethanolamine	Ethanolamine	141-43-5	>99
Diethanolamine	DEA	111-42-2	<0.2

### SECTION 4. FIRST-AID MEASURES

**Description of first aid measures**

- Ingestion* : Do NOT induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Seek immediate medical attention/advice. Never give anything by mouth if victim is unconscious.
- Inhalation* : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.
- Skin contact* : Take off all contaminated clothing immediately. Immediately flush skin with gently flowing, running water for at least 20 minutes. Do not rub area of contact. Seek immediate medical attention/advice. Wash contaminated clothing before reuse.
- Eye contact* : Immediately flush eyes with running water for at least 20 minutes. Seek immediate medical attention/advice.

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### Most important symptoms and effects, both acute and delayed

- : Harmful if swallowed. Ingestion may cause severe irritation to the mouth, throat and stomach. May cause respiratory irritation. Symptoms may include upper respiratory irritation, coughing and breathing difficulties. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Causes severe skin irritation. Symptoms may include redness, blistering, pain and swelling. Causes serious eye damage. Can cause irritation, redness, tearing, and blurred vision and/or eye damage. Suspected of causing cancer.

### Indication of any immediate medical attention and special treatment needed

- : Immediate medical attention is required. Treat symptomatically.

## SECTION 5. FIRE-FIGHTING MEASURES

### Extinguishing media

#### *Suitable extinguishing media*

- : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Some chemical extinguishing agents may react with this material.

#### *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 produces obnoxious and toxic fumes. Vapours are heavier than air, and may travel or be moved along the ground to an ignition source at locations distant from material handling.

### Flammability classification (OSHA 29 CFR 1910.106)

- : Not flammable.

### Hazardous combustion products

- : Ammonia; hydrogen cyanide ; Carbon oxides; Nitriles; Isocyanates; Nitrosamines; formaldehyde ;Nitrogen 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. A full-body chemical resistant suit should be worn. 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

- : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

### Environmental precautions

- : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. For large spills, dike the area to prevent spreading.

### Methods and material for containment and cleaning up

- : Remove all sources of ignition. Ventilate area of release. Stop the flow of material, if this is without risk. 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

- : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).  
US CERCLA Reportable quantity (RQ): Diethanolamine (100 lbs / 45.4 kg)

### SECTION 7. HANDLING AND STORAGE

#### Precautions for safe handling

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. Do not ingest. Do not breathe the mist or vapor. Avoid contact with skin, eyes and clothing. Transfer only required amounts to work area. When mixing with water, stir small amounts in slowly. During preparation or dilution, always add liquid slowly to water and with constant stirring. When diluting, always add the product to water. Never add water to the product. Keep away from extreme heat and flame. Keep away from bases, metals and other incompatibles. Use only non-sparking tools. Keep container tightly closed when not in use. Wash thoroughly after handling.

#### Conditions for safe storage

- : Store in a cool, dry, well-ventilated area. Store away from incompatibles and out of direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. May be corrosive to metals. Store in corrosion-resistant containers.

#### Incompatible materials

:

### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Exposure Limits:

<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Monoethanolamine	3 ppm	6 ppm	3 ppm ; 6 mg/m <sup>3</sup>	N/Av
Diethanolamine	1 mg/m <sup>3</sup> (inhalable fraction and vapor) (skin)	N/Av	3 ppm (final rule limit)	N/Av

#### Exposure controls

##### Ventilation and engineering measures

- : Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

##### Respiratory protection

- : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. Confirmation of which type of respirator is most suitable for the intended application should be obtained from respiratory protection suppliers. 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

- : Wear chemically protective gloves (impervious), boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Advice should be sought from glove suppliers.

##### Eye / face protection

- : Chemical splash goggles must be worn when handling this material. A full face shield may also be necessary.

##### Other protective equipment

- : Other equipment may be required depending on workplace standards. An eyewash station and safety shower should be made available in the immediate working area.

##### General hygiene considerations



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: Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. 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 and wash contaminated clothing before re-use. Do not take contaminated clothing home.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : Colourless liquid.  
**Odour** : Ammonia odour.  
**Odour threshold** : 2.6 ppm  
**pH** : 11.7 - 12.1  
**Melting/Freezing point** : - 10.5°C (50.9°F)  
**Initial boiling point and boiling range** : 170.8°C ( 339.4°F)  
**Flash point** : 96°C (204.8°F)  
**Flashpoint (Method)** : PMCC: Pensky Martens Closed Cup  
**Evaporation rate (BuAe = 1)** : < 0.01  
**Flammability (solid, gas)** : Not applicable.  
**Lower flammable limit (% by vol.)** : 3%  
**Upper flammable limit (% by vol.)** : 23.5%  
**Oxidizing properties** : None known.  
**Explosive properties** : Not explosive  
**Vapour pressure** : 2 mm Hg  
**Vapour density** : 2.1  
**Relative density / Specific gravity** : 1.02  
**Solubility in water** : soluble  
**Other solubility(ies)** : Soluble in most organic solvents.  
**Partition coefficient: n-octanol/water or Coefficient of water/oil distribution** : N/Av  
**Auto-ignition temperature** : 410°C (770°F)  
**Decomposition temperature** : Not available.  
**Viscosity** : N/Av  
**Volatiles (% by weight)** : Not available.  
**Volatile organic Compounds (VOC's)** : N/Av  
**Absolute pressure of container** : N/Av  
**Flame projection length** : N/Av  
**Other physical/chemical comments** : None known or reported by the manufacturer.

### SECTION 10. STABILITY AND REACTIVITY

**Reactivity** : Not normally reactive. Contact with metals may release small amounts of flammable hydrogen gas.  
**Chemical stability** : Stable under normal conditions.  
**Possibility of hazardous reactions** : No dangerous reaction known under conditions of normal use.



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- Conditions to avoid** : Avoid heat and open flame. Ensure adequate ventilation, especially in confined areas.  
Avoid contact with incompatible materials.
- Incompatible materials** :
- Hazardous decomposition products** : None known, refer to hazardous combustion products in Section 5.

### 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*

- : Inhalation of high concentrations of fumes or mists may cause severe irritation and corrosive damage to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. Inhalation of extremely high concentrations could cause pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Prolonged overexposure can cause unconsciousness and death.

###### *Sign and symptoms ingestion*

- : May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.

###### *Sign and symptoms skin*

- : Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.

###### *Sign and symptoms eyes*

- : Severe irritation, burns and possibly permanent eye damage may result from direct contact.

##### Potential Chronic Health Effects

- : Chronic skin contact with low concentrations may cause dermatitis. Prolonged or repeated inhalation of fumes or vapours, may cause chronic lung effects, such as bronchitis.

##### Mutagenicity

- : Not expected to be mutagenic in humans.

##### Carcinogenicity

- : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification Carcinogenicity - Category 2 Suspected of causing cancer. Contains: Diethanolamine

##### 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

- : Eyes, skin, respiratory system and digestive system.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification: Specific Target Organ Toxicity, Single Exposure -Category 3 (respiratory) May cause respiratory irritation.

Not classified as a specific target organ toxicity-repeated exposure.

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**Medical conditions aggravated by overexposure**

: Pre-existing skin, eye and respiratory disorders.

**Synergistic materials**

: Not available.

**Toxicological data**

: See below for toxicological data on the substance.

<u>Chemical name</u>	<u>LC<sub>50</sub>(4hr)</u>	<u>LD<sub>50</sub></u>	
	<u>inh. rat</u>	<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Monoethanolamine	> 1210 mg/m <sup>3</sup> (> 1.21 mg/L) (mist) (mouse)	1720 mg/kg	1000 mg/kg
Diethanolamine	N/Av	680 mg/kg	8180 mg/kg

**Other important toxicological hazards**

: None known or reported by the manufacturer.

### SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

: Harmful to aquatic life. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. See the following tables for the substance's ecotoxicity data.

**Ecotoxicity data:**

<u>Ingredients</u>	CAS No	<u>Toxicity to Fish</u>		
		<u>LC50 / 96h</u>	<u>NOEC / 21 day</u>	<u>M Factor</u>
Monoethanolamine	141-43-5	349 mg/L (common carp)	1.2 mg/L/30 days (Japanese ricefish)	None.
Diethanolamine	111-42-2	1370 mg/L (Fathead minnow)	N/Av	None.

<u>Ingredients</u>	CAS No	<u>Toxicity to Daphnia</u>		
		<u>EC50 / 48h</u>	<u>NOEC / 21 day</u>	<u>M Factor</u>
Monoethanolamine	141-43-5	50 mg/L Water flea	0.85 mg/L	None.
Diethanolamine	111-42-2	55 mg/L (Daphnia magna)	0.78 mg/L	None.

<u>Ingredients</u>	CAS No	<u>Toxicity to Algae</u>		
		<u>EC50 / 96h or 72h</u>	<u>NOEC / 96h or 72h</u>	<u>M Factor</u>
Monoethanolamine	141-43-5	2.5 mg/L/72hr (Green algae)	1 mg/L/72hr	None.
Diethanolamine	111-42-2	2.2 mg/L/96hr (Green algae)	N/Av	None.

**Persistence and degradability**

: Readily biodegradable.

**Bioaccumulation potential**

: No data is available on the product itself.

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<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Monoethanolamine (CAS 141-43-5)	-1.91 at 25 °C	3
Diethanolamine (CAS 111-42-2)	-2.18 at 25 °C	no significant bioconcentration

**Mobility in soil** : No data is available on the product itself.

**Other Adverse Environmental effects**

: No additional information.



### SECTION 13. DISPOSAL CONSIDERATIONS

**Handling for Disposal** : Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

**Methods of Disposal** : Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.

**RCRA** : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. 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, state and federal environmental agencies.

### SECTION 14. TRANSPORTATION INFORMATION

<b>Regulatory Information</b>	<b>UN Number</b>	<b>UN proper shipping name</b>	<b>Transport hazard class(es)</b>	<b>Packing Group</b>	<b>Label</b>
49CFR/DOT	UN2491	ETHANOLAMINE	8	III	
<b>49CFR/DOT Additional information</b>	Not regulated for rail or road shipment if packaged in non-bulk containers (450 Litres or less each). Limited quantity exemptions may be used if product is in containers of 1.0 Litre or less, per section 173.154 of 49 CFR. ERAP: 3000 L				
ICAO/IATA	UN2491	Ethanolamine	8	III	
<b>ICAO/IATA Additional information</b>	Refer to ICAO/IATA Packing Instruction				
IMDG	UN2491	ETHANOLAMINE		III	
<b>IMDG Additional information</b>	May be shipped as a Limited Quantity when transported in containers no larger than 5 L (1.3 gallons); in packages not exceeding 30 kg (66 pounds) gross mass.				

**Special precautions for user** : Keep away from heat and open flames. - No smoking.

**Environmental hazards** : See ECOLOGICAL INFORMATION, Section 12.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

: Not available.





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### SECTION 15 - REGULATORY INFORMATION

#### US Federal Information:

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

<u>Ingredients</u>	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
Monoethanolamine	141-43-5	Yes	None.	None.	No	N/Ap
Diethanolamine	111-42-2	Yes	100 lb/ 45.4 kg	None.	Yes	1%

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Acute Health Hazard; Chronic Health Hazard. 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:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Monoethanolamine	141-43-5	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Diethanolamine	111-42-2	Yes	Carcinogen	Yes	Yes	Yes	Yes	Yes	Yes

#### Canadian Information:

#### International Information:

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

<u>Ingredients</u>	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Monoethanolamine	141-43-5	205-483-3	Present	Present	(2)-301	KE-20493	Present (01018)	HSR002984
Diethanolamine	111-42-2	203-868-0	Present	Present	(2)-354; (2)-302	KE-20959	Present (11481)	HSR002962

### SECTION 16. OTHER INFORMATION

#### Legend

: ACGIH: American Conference of Governmental Industrial Hygienists  
CA: California  
CAS: Chemical Abstract Services  
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980  
CFR: Code of Federal Regulations  
DOT: Department of Transportation



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EPA: Environmental Protection Agency  
 HMIS: Hazardous Materials Identification System  
 HSDB: Hazardous Substances Data Bank  
 IARC: International Agency for Research on Cancer  
 Inh: Inhalation  
 IUCLID: International Uniform Chemical Information Database  
 MA: Massachusetts  
 MN: Minnesota  
 MSHA: Mine Safety and Health Administration  
 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  
 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  
 TDG: Canadian Transportation of Dangerous Goods Act & Regulations  
 TLV: Threshold Limit Values  
 TWA: Time Weighted Average  
 WHMIS: Workplace Hazardous Materials Identification System

**References** : Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2015 (Chempendium, RTECs, HSDB, INCHEM).  
 European Chemicals Agency, Classification Legislation, 2015  
 OECD- The Global Portal to Information on Chemical Substances - eChemPortal, 2015  
 Material Safety Data Sheet from manufacturer.

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

**HMIS Rating** : \* - Chronic hazard 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe  
*Health: 3 Flammability: 2 Reactivity: 1*

**NFPA Rating** 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe  
 : *Health: 3 Flammability: 2 Instability: 1 Special Hazards: None.*

<p><b>Prepared for:</b> Comet Chemical Company Ltd. 3463 Thomas Street Innisfill, ON L9S 3W4 Information (M-F 8:00-5:00): 705-436-5580 www.cometchemical.com</p>	
<p><b>Prepared by:</b> ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) <a href="http://www.thecompliancecenter.com">http://www.thecompliancecenter.com</a></p>	



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## **SAFETY DATA SHEET**

### **DISCLAIMER**

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