

# SAFETY DATA SHEET

## 1. Identification

<b>Product identifier</b>	<b>EX-88- Hardener</b>
<b>Other means of identification</b>	
<b>SDS number</b>	01188
<b>Product code</b>	01188, 01288, 01287, 01179, 01183, 01488, 01189, 01188R, 120
<b>Recommended use</b>	High Gloss Coating
<b>Recommended restrictions</b>	None known.
<b>Manufacturer/Importer/Supplier/Distributor information</b>	
<b>Manufacturer</b>	
<b>Company name</b>	Environmental Technology, Inc.
<b>Address</b>	300 S. Bay Depot Road Fields Landing CA 95537, USA.
<b>Telephone number</b>	001 707-443-9323
<b>E-mail</b>	mail@eti-usa.com
<b>Contact person</b>	Technical Director
<b>Emergency phone number</b>	800-424-9300 (CHEMTREC)

## 2. Hazard identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Sensitization, skin	Category 1
	Reproductive toxicity	Category 2

### Label elements



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Suspected of damaging fertility. Suspected of damaging the unborn child.
<b>Precautionary statement</b>	
<b>Prevention</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapour. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
<b>Response</b>	IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. 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 CENTRE/doctor. Wash contaminated clothing before reuse.
<b>Storage</b>	Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Other hazards</b>	None known.
<b>Supplemental information</b>	None known.

### 3. Composition/information on ingredients

#### Mixtures

Chemical name	Common name and synonyms	CAS number	%
2-Piperazin-1-ylethy lamine		140-31-8	3-7% wt/wt
Alkyl Ether Amine		39423-51-3	7-13% wt/wt
Nonylphenol		84852-15-3	40-70% wt/wt
Polyoxypropylenediamine		9046-10-0	15-40% wt/wt

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

### 4. First-aid measures

<b>Inhalation</b>	If inhaled, remove to fresh air. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.
<b>Skin contact</b>	Remove contaminated clothing. Rinse skin thoroughly with lukewarm water for at least 15 minutes. Call a physician or poison control centre immediately. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately.
<b>Ingestion</b>	Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Call a physician or Poison Control Centre immediately. Never give anything by mouth to a victim who is unconscious or is having convulsions.
<b>Most important symptoms/effects, acute and delayed</b>	Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. May cause an allergic skin reaction. Dermatitis. Rash. Contact can cause corrosive burns, corneal damage, and blindness. Itching, redness, swelling, burning or blistering of skin.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Exposure may aggravate pre-existing skin disorders.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	Water. Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	During fire, gases hazardous to health may be formed such as: Carbon oxides (CO <sub>x</sub> ). Nitrogen Oxides
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	In case of fire do not breath fumes. Move container from fire area if it can be done without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.

### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Ensure adequate ventilation. Do not breathe mist or vapour. Avoid contact with skin and eyes. Keep unnecessary personnel away. Keep out of low areas. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	Keep unnecessary personnel away. This product is miscible in water. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Collect and dispose of spillage as indicated in section 13 of the SDS. Prevent entry into waterways, sewer, basements or confined areas.
	Never return spills to original containers for re-use.

**Environmental precautions** Avoid discharge into drains, water courses or onto the ground. Contact local authorities in case of spillage to drain/aquatic environment.

## 7. Handling and storage

**Precautions for safe handling** Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapour. Do not get this material in your eyes, on your skin, or on your clothing. Avoid contact during pregnancy/while nursing. Provide adequate ventilation. Use personal protective equipment as required. Wash contaminated clothing before reuse. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Keep out of reach of children.

**Conditions for safe storage, including any incompatibilities** Keep out of the reach of children. Store locked up. Store in tightly closed original container in a dry, cool and well-ventilated place. Store away from incompatible materials, see Section 10 of the SDS.

## 8. Exposure controls/personal protection

**Occupational exposure limits** No exposure limits noted for ingredient(s).

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Exposure guidelines** No exposure standards allocated. Use personal protective equipment as required. Keep working clothes separately.

**Appropriate engineering controls** Good general ventilation 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. Eye wash facilities and emergency shower must be available when handling this product.

### Individual protection measures, such as personal protective equipment

**Eye/face protection** Wear safety glasses with side shields (or goggles) and a face shield.

#### Skin protection

**Hand protection** Chemical resistant gloves. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

#### Other

Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

**Respiratory protection** If ventilation is insufficient, suitable respiratory protection must be provided.

**Thermal hazards** Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations** When using, do not eat, drink or smoke. 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. Contaminated work clothing should not be allowed out of the workplace. Wash at the end of each work shift and before eating, smoking or using the toilet.

## 9. Physical and chemical properties

**Appearance** Viscous liquid.

**Physical state** Liquid.

**Form** Pourable liquid.

**Colour** Clear.

**Odour** Minimal. Not distinct. Ammonia-like.

**Odour threshold** Not available.

**pH**  $\geq 11.7$

**Melting point/freezing point** Not available.

**Initial boiling point and boiling range** Not available.

**Flash point**  $> 121.0\text{ }^{\circ}\text{C}$  ( $> 249.8\text{ }^{\circ}\text{F}$ ) Closed cup

**Evaporation rate** Not available.

**Flammability (solid, gas)** Not applicable.

### Upper/lower flammability or explosive limits

**Flammability limit - lower (%)** Not available.

**Flammability limit - upper (%)** Not available.

**Explosive limit - lower (%)** Not available.

<b>Explosive limit – upper (%)</b>	Not available.
<b>Vapour pressure</b>	Not available.
<b>Vapour density</b>	> 1 (Air = 1)
<b>Relative density</b>	1.15
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Slightly soluble (0.1-1%)
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Explosive properties</b>	Not explosive.
<b>Oxidising properties</b>	Not oxidising.

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport. Read and follow manufacturer's recommendations.
<b>Chemical stability</b>	Stable under normal temperature conditions and recommended use.
<b>Possibility of hazardous reactions</b>	Hazardous polymerisation does not occur.
<b>Conditions to avoid</b>	Avoid temperatures exceeding the flash point. Reacts violently with strong acids. This product may react with oxidizing agents. Do not mix with other chemicals. Avoid incompatible materials and intense heat.
<b>Incompatible materials</b>	Acids. Strong oxidising agents. Oxidizing agents.
<b>Hazardous decomposition products</b>	None expected under normal conditions of use.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Under normal conditions of intended use, this material is not expected to be an inhalation hazard. When heated, the vapours/fumes given off may cause respiratory tract irritation.
<b>Skin contact</b>	Causes severe skin burns. May cause an allergic skin reaction. May be harmful if absorbed through skin.
<b>Eye contact</b>	Causes eye burns. Causes serious eye damage.
<b>Ingestion</b>	Causes digestive tract burns. Harmful if swallowed. Under normal conditions of intended use, this material does not pose a risk to health.

**Symptoms related to the physical, chemical and toxicological characteristics** Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. May cause an allergic skin reaction. Dermatitis. Rash. Contact can cause corrosive burns, corneal damage, and blindness. Itching, redness, swelling, burning or blistering of skin.

### Information on toxicological effects

**Acute toxicity** Harmful if swallowed. May be harmful if absorbed through skin. May cause digestive tract burns.

<b>Components</b>	<b>Species</b>	<b>Test Results</b>
2-Piperazin-1-ylethy lamine (CAS 140-31-8)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	880 mg/kg
<b>Oral</b>		
LD50	Rat	> 1000 mg/kg
Nonylphenol (CAS 84852-15-3)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	2031 mg/kg

Components	Species	Test Results
<b>Oral</b> LD50	Rat	1200 mg/kg
<b>Skin corrosion/irritation</b>	Corrosive to skin and eyes. Causes severe skin burns and eye damage.	
<b>Serious eye damage/eye irritation</b>	Causes eye burns. Causes serious eye damage.	
<b>Respiratory or skin sensitisation</b>		
<b>Respiratory sensitisation</b>	Due to partial or complete lack of data the classification is not possible.	
<b>Skin sensitisation</b>	May cause an allergic skin reaction.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
<b>Reproductive toxicity</b>	Possible reproductive hazard. Possible risk of harm to the unborn child. Possible risk of impaired fertility.	
<b>Specific target organ toxicity - single exposure</b>	Not classified.	
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.	
<b>Aspiration hazard</b>	Due to the high viscosity the product is not an aspiration hazard.	
<b>Chronic effects</b>	Prolonged exposure may cause chronic effects. Possible adverse reproductive and developmental effects.	
<b>Further information</b>	Reproductive toxicity. Symptoms may be delayed. May cause allergic respiratory and skin reactions.	

## 12. Ecological information

<b>Ecotoxicity</b>	Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the environment.
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Components	Species	Test Results
2-Piperazin-1-ylethy lamine (CAS 140-31-8)		
<b>Aquatic</b>		
Fish	LC50	Fathead minnow ( <i>Pimephales promelas</i> ) 1950 - 2460 mg/l, 96 hours
Nonylphenol (CAS 84852-15-3)		
<b>Aquatic</b>		
<i>Acute</i>		
Algae	EC50	Scenedesmus subspicatus 1.3 mg/l, 72 Hours
Crustacea	EC50	Daphnia magna 0.085 mg/l, 48 Hours
Fish	LC50	Pimephales promelas 0.128 mg/l, 96 Hours
<i>Chronic</i>		
Crustacea	NOEC	Daphnia magna 24 µg/l, 21 days
Fish	NOEC	Pimephales promelas 0.0074 mg/l, 33 days
Polyoxypropylenediamine (CAS 9046-10-0)		
<b>Aquatic</b>		
<i>Chronic</i>		
Algae	NOEC	Algae 0.32 mg/l, 72 hours
<b>Persistence and degradability</b>	No data is available on the degradability of this product.	
<b>Bioaccumulative potential</b>		
<b>Partition coefficient n-octanol / water (log Kow)</b>		
Nonylphenol (CAS 84852-15-3)	5.71	
<b>Mobility in soil</b>	No data available.	
<b>Other adverse effects</b>	None known.	

## 13. Disposal considerations

<b>Disposal instructions</b>	Dispose in accordance with applicable federal, state, and local regulations. Do not allow this material to drain into sewers/water supplies.
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<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Dispose in accordance with applicable federal, state, and local regulations.

## 14. Transport information

### TDG

<b>UN number</b>	UN1760
<b>UN proper shipping name</b>	Corrosive liquids, n.o.s. (Nonyl Phenol Mixture)
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	-
<b>Packing group</b>	III
<b>Environmental hazards</b>	Yes
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.

### IATA

<b>UN number</b>	UN1760
<b>UN proper shipping name</b>	Corrosive liquids, n.o.s. (Nonyl Phenol Mixture)
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	8
<b>Packing group</b>	III
<b>Environmental hazards</b>	Yes
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.

### IMDG

<b>UN number</b>	UN1760
<b>UN proper shipping name</b>	Corrosive liquids, n.o.s. (Nonyl Phenol Mixture)
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	8
<b>Packing group</b>	III
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>EmS</b>	Not available.
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

**General information** IMDG Regulated Marine Pollutant.

## 15. Regulatory information

**Canadian regulations** This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

### Controlled Drugs and Substances Act

Not regulated.

### Export Control List (CEPA 1999, Schedule 3)

Not listed.

### Greenhouse Gases

Not listed.

### Precursor Control Regulations

Not regulated.

### International regulations

#### Stockholm Convention

Not applicable.

**Rotterdam Convention**

Not applicable.

**Kyoto Protocol**

Not applicable.

**Montreal Protocol**

Not applicable.

**Basel Convention**

Not applicable.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**16. Other information**

**Issue date** 17-September-2017

**Revision date** 21-July-2019

**Version No.** 02

**List of abbreviations** LD50: Lethal Dose 50%.  
 LC50: Lethal Concentration 50%.  
 EC50: Effective Concentration, 50%.  
 NOAEC: No observed adverse effect concentration. PEL: Permissible Exposure Limit.  
 STEL: Short-term Exposure Limit.  
 TWA: Time Weighted Average Value.

**References** ACGIH  
 EPA: AQUIRE database  
 NLM: Hazardous Substances Data Base  
 US. IARC Monographs on Occupational Exposures to Chemical Agents  
 HSDB® - Hazardous Substances Data Bank  
 IARC Monographs. Overall Evaluation of Carcinogenicity  
 National Toxicology Program (NTP) Report on Carcinogens  
 ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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