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**SDS Revision Date (dd/mm/yyyy): 22/02/2024**
**Revision No.: 5**

# SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

## SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

**1.1 Product identifier** : **CHO-BOND® 584**

**Product Code(s)** : 584

**SDS No.** : PHC-049 EU

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

: Silver-filled conductive epoxy.
Use pattern: professional use.
Refer to restrictions found in REACH Annex XVII item 75.

**1.3 Details of the supplier of the safety data sheet:**

**Parker Hannifin Manufacturing France SAS**
ZAC des Epineaux
7 avenue Louis Blériot
95740 Frépillon
France
Email: parker.france@parker.com
Website: www.parkerfrance.fr

**Telephone** : 033 (01) 34 32 39 00

**1.4 Emergency Telephone Number**

: +1 (352) 323-3500 (INFOTRAC - United States of America)
Poisons Information Centre
Czech Republic +420 267 082 236/+420 267 082 230/ +420 267 082 229
Portugal +35 12 13 30 3271
Germany +49-30-18412-0
The United Kingdom +44 121 507 4123
France + 33 3 83 85 21 92
Romania +40 21 318 3606
Sweden +46 10 456 6750
The Netherlands +31 88 75 585 61
Poland +48 42 2538 400
Spain +34 917689800
Norway +4573580500
Italy 06 68593726 (CAV "Osp. Pediatrico Bambino Gesu" Dip. Emergenza - Roma)
800
183459 (Az. Osp. Univ. Foggia - Foggia)
081 5453333 (Az. Osp. "A. Cardarelli" - Napoli)
06 49978000 (CAV Policlinico "Umberto I" - Roma)
06 3054343 (CAV Policlinico "A. Gemelli" - Roma)
055 7947819 (Az. Osp. "Careggi" U.O. Tossicologia Medica - Firenze)
0382 24444 (CAV Centro Nazionale di Informazione Tossicologica - Pavia) 02
66101029 (Osp. Niguarda Ca' Granda - Milano)
800 883300 (Azienda Ospedaliera Papa Giovanni XXII - Bergamo)

**1.5 National Contact**

: E-mail: chomerics_europe@parker.com
Website: www.chomerics.com

## SECTION 2. HAZARDS IDENTIFICATION

**2.1 Classification of the substance or mixture**

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Liquid - silver. Mild odour.

Most important hazards:
Excessive heating above 50°C / 122°F may degrade the resin component. Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. Suspected of causing genetic defects. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS. Toxic to aquatic life with long lasting effects. See Section 12 for more environmental information.

This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:
Skin corrosion/irritation - Category 2; H315
Eye damage/irritation - Category 2; H319
Skin sensitization - Category 1; H317
Germ cell mutagenicity - Category 2; H341
Chronic aquatic hazard - Category 2; H411

**2.2 Label elements**

*Hazard pictogram(s)*

Hazardous components which must be listed on the label: Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether.

Signal word:
Warning!

Hazard statements:
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H317 - May cause an allergic skin reaction.
H341 - Suspected of causing genetic defects.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements:
P201 - Obtain special instructions before use.
P280 - Wear protective gloves/clothing and eye/face protection.
P308 + P313 - IF exposed or concerned: Get medical advice/attention.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P501 - Dispose of contents/container in accordance with local regulation.

**2.3 Other hazards**

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Other hazards which do not result in classification:
Excessive heating above 50°C / 122°F may degrade the resin component. May release peroxides on exposure to light and air, or on contact with incompatibles. Rate of peroxide formation is not known. Burning produces obnoxious and toxic fumes. May cause endocrine disruption. Mild respiratory irritant. Inhalation of fumes may result in metal fume fever, a flu-like illness. May cause gastrointestinal irritation. Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

Endocrine disrupting properties: May cause endocrine disruption.

PBT assessment :
This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

Not applicable

### 3.2 Mixtures

Chemical nature - Mixture of: Inorganic substances in powdered form; Epoxy resin; Ether.

The following substances shall be indicated according to legislation:

| Substance name | CAS No | EC No. | Reach Registration No. | % Weight | Classification according to Regulation (EC) nr. 1272/2008 | SCL, M-factor, ATE |
|---|---|---|---|---|---|---|
| **silver** | 7440-22-4 | 231-131-3 | Not applicable. | **65.0 - 75.0** | not hazardous. Substances for which there are Community workplace exposure limits. | Not applicable. |
| **Reaction product: bisphenol-A-(epichlorohydrin)** | 25068-38-6 | 500-033-5 | Not applicable. | **20.0 - 30.0** | Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411 | Not applicable. |
| **2,3-epoxypropyl o-tolyl ether** | 2210-79-9 | 218-645-3 | Not applicable. | **5.0 - 8.0** | Skin Irrit. 2; H315 Skin Sens. 1; H317 Muta. 2; H341 Aquatic Chronic 2; H411 | Not applicable. |

For the full text of the H phrases not mentioned in this Section or in Section 2, see Section 16.

## SECTION 4. FIRST-AID MEASURES

### 4.1 Description of first aid measures

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*Ingestion* : Do not induce vomiting. Never give anything by mouth to a person who is unconscious or is having convulsions. IF exposed or concerned: Get medical attention/advice.

*Inhalation* : If breathed in, move person into fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stops, provide artificial respiration. IF exposed or concerned: Get medical attention/advice.

*Skin contact* : IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

*Eye contact* : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.

**4.1.2 Self-protection for the first aider**

: None known or reported by the manufacturer.

**4.2 Most important symptoms and effects, both acute and delayed**

: Causes skin irritation. Contact may cause redness, swelling and a painful sensation. Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.
May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
Mild respiratory irritant. May cause coughing and breathing difficulties. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**4.3 Indication of any immediate medical attention and special treatment needed**

: Provide general supportive measures and treat symptomatically.

## SECTION 5. FIRE-FIGHTING MEASURES

**5.1 Extinguishing media**

*Suitable extinguishing media*

: Carbon dioxide (CO2); Dry chemical; Alcohol resistant foam; Water spray .

*Unsuitable extinguishing media*

: None known.

**5.2 Special hazards arising from the substance or mixture**

: Not considered flammable. However, may burn if exposed to extreme heat and flame. After prolonged storage, may release explosive peroxides in the presence of air. Rate of peroxide formation is not known. The pressure in sealed containers can increase under the influence of heat. Burning produces obnoxious and toxic fumes. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Phenol; Aldehydes; Other unidentified organic compounds.

**5.3 Advice 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. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

*Special fire-fighting procedures*

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not get water inside containers. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures**

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: Keep people away from and upwind of spill/leak. Wear appropriate protective equipment.

**6.2 Environmental precautions**

: Avoid release to the environment. Prevent product from entering drains, sewers, waterways and soil.

**6.3 Methods and material for containment and cleaning up**

: Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product. Contact the proper local authorities.

**6.4 Reference to other sections**

: Refer to protective measures listed in sections 7 and 8. Refer to Section 13 for disposal of contaminated material.

## SECTION 7. HANDLING AND STORAGE

**7.1 Precautions for safe handling**

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
Persons with recurrent skin eczema or sensitization problems should be excluded from working with this product. Once a person is sensitized, no further exposure to the material that caused the sensitization should be permitted.
Ensure adequate ventilation. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Avoid breathing dust, mist or vapours. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and direct flame. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

**7.2 Conditions for safe storage, including any incompatibilities**

: Store in cool/well-ventilated place. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Do not store near any incompatible materials (see Section 10).

**7.3 Specific end use(s)** : Filled Epoxy Kit

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control Parameters

**Exposure Limits:**

| Chemical Name | Exposure Limits | Type | Notes |
|---|---|---|---|
| **silver** | | | |
| | 0.1 mg/m³ (TWA) | European Union (OEL) | None. |
| | 0.1 mg/m³ (TWA)<br>0.3 mg/m³ (Ceiling Limit Value)<br>0.01 mg/m³ (dust) (TWA) | Czech Republic (OEL)<br>Denmark (OEL) | None.<br>None. |
| | 0.1 mg/m³ (TWA) | Finland (OEL) | None. |
| | 0.1 mg/m³ (TWA) | France (OEL) | None. |

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| | | | |
|---|---|---|---|
| | 0.1 mg/m³ (inhalable) (TWA) | Germany (OEL) | (exposure factor 8) |
| | 0.1 (TWA)<br>0.4 mg/m³ (STEL) | Hungary (OEL) | None. |
| | 0.1 mg/m³ (TWA) | Italy (OEL) | None. |
| | 0.1 mg/m³ (TWA) | Netherlands (OEL) | None. |
| | 0.05 mg/m³ (TWA) | Poland (OEL) | None. |
| | 0.1 mg/m³ (TWA) | Portugal (OEL) | None. |
| | 0.1 mg/m³ (TWA) | Spain (OEL) | None. |
| | 0.1 mg/m³ (TWA) | Sweden (OEL) | None. |
| | 0.1 mg/m³ (TWA) | The United Kingdom (WELs) | None. |
| **Reaction product: bisphenol-A-(epichlorohydrin)** | | | |
| | N/Av | European Union (OEL) | N/Av |
| **2,3-epoxypropyl o-tolyl ether** | | | |
| | None known. | European Union (OEL) | None. |
| | N/Av | Germany (OEL) | N/Av |

**Biological Exposure Indices:**

No biological exposure limits noted for the ingredient(s).

Derived No Effect Level (DNEL):
(CAS 7440-22-4) general population inhalation systemic effects long term exposure 0.04 mg/m3; workers inhalation systemic effects long term exposure 0.1 mg/m3 ; general population oral systemic effects long term exposure 1.2 mg/kg bw/day

(CAS 2210-79-9) general population oral systemic effects long term exposure 3 mg/kg; workers dermal systemic effects long term exposure 6 mg/kg bw/day ; workers inhalation systemic effects long term exposure 21.12 mg/m3; workers inhalation systemic effects acute/short term exposure 42.24 mg/m3

Predicted No Effect Concentration (PNEC):

(7440-22-4) 0.04 µg/L (freshwater); 0.86 µg/L (marine water); 438.13 mg/kg (sediment (freshwater)); 438.13 mg/kg (sediment (marine water); 0.025 mg/L (sewage treatment); 1.41 mg/kg (soil)

(CAS 2210-79-9) 2.8 µg/L (freshwater); 0.28 µg/L (marine water); 28 µg/L (freshwater (intermittent releases); 0.039 mg/kg (sediment (freshwater); 0.0039 mg/kg (sediment (marine water); 10 mg/L (sewage treatmen); 0.012 mg/kg (soil)

zzz

## 8.2 Exposure controls

**Ventilation and engineering measures**

: Provide adequate ventilation. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.

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**Respiratory protection** : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used. Advice should be sought from respiratory protection specialists.

**Skin protection** : Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it. Wear resistant clothing and boots.

**Eye / face protection** : Wear eye/face protection. Chemical splash goggles are recommended. A full face shield may also be necessary. See also EN 166.

**Other protective equipment**

: Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

**General hygiene considerations**

: Avoid breathing dust, mist or vapours. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing should not be allowed out of the workplace.

## 8.3 Environmental exposure controls

: Dike for water control. Avoid release to the environment.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

**Physical state** : Liquid - silver
**Colour** : Silver
**Odour** : mild
**Odour threshold** : No information available.
**pH** : No information available.
**Flash point** : > 93.3°C
**Flashpoint (Method)** : closed cup
**Lower flammable limit (% by vol.)**

: No information available.

**Upper flammable limit (% by vol.)**

: No information available.

**Auto-ignition temperature**

: No information available.

**Decomposition temperature**

: No information available.

**Oxidizing properties** : None.
**Explosive properties** : Not explosive
**Initial boiling point and boiling range**

: No information available.

**Melting/Freezing point** : No information available.
**Relative density** : > 1
**Solubility in water** : insoluble
**Other solubility(ies)** : No information available.

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**Vapour pressure** : No information available.
**Vapour density** : No information available.
**Partition coefficient: n-octanol/water**
: No information available.
**Viscosity** : No information available.
**Evaporation rate (BuAe = 1)**
: No information available.
**Particle characteristics** : Not applicable.

## 9.2 Other Information

**Volatiles (% by weight)** : No information available.
**Volatile organic Compounds (VOC's)**
: No information available.
**Other physical/chemical comments**
: No additional information.

## SECTION 10. STABILITY AND REACTIVITY

**10.1 Reactivity** : Not normally reactive.
**10.2 Chemical stability** : Stable under normal conditions. After prolonged storage, may release explosive peroxides in the presence of air. Rate of peroxide formation is not known.
**10.3 Possibility of hazardous reactions**
: Hazardous polymerization does not occur.
**10.4 Conditions to avoid** : Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.
**10.5 Incompatible materials**
: Strong oxidizing agents; Strong acids; Strong bases; Amines; Mercaptans
**10.6 Hazardous decomposition products**
: Peroxides
Burning produces obnoxious and toxic fumes. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Phenol; Aldehydes; Other unidentified organic compounds.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects:

**Acute toxicity** : According to the classification criteria of the European Union, this product is not considered as being an acutely toxic chemical.
**Skin corrosion/Irritation** : This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:
Skin corrosion/irritation - Category 2. Causes skin irritation.
**Serious eye damage/irritation**
: This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:
Eye damage/irritation - Category 2. Causes serious eye irritation.
**Respiratory or skin sensitisation**

# SAFETY DATA SHEET

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: This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:
Skin sensitization - Category 1. May cause an allergic skin reaction.
May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
Not expected to be a respiratory sensitizer.

**Germ cell mutagenicity** : This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:
Germ cell mutagenicity - Category 2. Suspected of causing genetic defects.
Contains: 2,3-epoxypropyl o-tolyl ether (o-Cresyl glycidyl ether). o-Cresyl glycidyl ether induced a reproducible, dose-related increase in the His+ revertant frequency in Salmonella tester strains TA1535 and TA100, without rodent liver S9 metabolic activation. Therefore, the test substance is considered a direct-acting gene-mutagen in Salmonella under the conditions of the study. These positive findings suggest that the test substance induced repairable DNA damage in human lymhpocytes.

**Carcinogenicity** : Contains no ingredient listed as a carcinogen

**Reproductive toxicity** : Contains no ingredient listed as toxic to reproduction.

**STOT-single exposure** : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through repeated doses.

**STOT-repeated exposure** : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through repeated exposures.

**Aspiration hazard** : According to the classification criteria of the European Union, this product is not considered as being an aspiration hazard to humans.

**Routes of exposure** : Eye contact; Skin contact; Inhalation; Ingestion

**Effects of acute exposure** : Inhalation: Mild respiratory irritant. May cause coughing and breathing difficulties. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.

Skin contact: Causes skin irritation. Contact may cause redness, swelling and a painful sensation.

Eye contact: Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Potential Chronic Health Effects**

: None known or reported by the manufacturer.

## 11.1.1 Acute Toxicity

**Toxicological data** : There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

| Chemical name | $LC_{50}$(4hr) inh, rat | $LD_{50}$ (Oral, rat) | (Rabbit, dermal) |
|---|---|---|---|
| silver | > 5.16 mg/L (dust) (No mortality) | > 2000 mg/kg (No mortality) | > 2000 mg/kg (No mortality) |
| Reaction product: bisphenol-A-(epichlorohydrin) | No information available. | 11 400 mg/kg | > 2000 mg/kg (No mortality) |
| 2,3-epoxypropyl o-tolyl ether | > 6.09 mg/L (mist) | > 5000 mg/kg | > 2000 mg/kg (No mortality) |

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**11.2 Information on other Hazards**

: Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

11.2.1 Endocrine disrupting properties :May cause endocrine disruption. 11.2.2 Other hazards:none

## SECTION 12. ECOLOGICAL INFORMATION

**12.1 Toxicity** : Toxic to aquatic life with long lasting effects. No data is available on the product itself. The product contains the following substances which are hazardous for the environment: Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether. Should not be released into the environment.
This product also contains: Silver The acute toxicity of silver to aquatic species varies drastically by the chemical form and correlates with the availability of free ionic silver. Aquatic toxicity is highly variable not only by organism but with physical and chemical characteristics of the water itself.

See the following tables for individual ingredient ecotoxicity data.

***Ecotoxicity data:***

| Ingredients | CAS No | Toxicity to Fish | | |
|---|---|---|---|---|
| | | LC50 / 96h | NOEC / 21 day | M Factor |
| silver | 7440-22-4 | No information available. | No information available. | No information available. |
| Reaction product: bisphenol-A-(epichlorohydrin) | 25068-38-6 | 3.4 mg/L (Rainbow trout) | No information available. | None. |
| 2,3-epoxypropyl o-tolyl ether | 2210-79-9 | 2.8 - 5.1 mg/L (Rainbow trout) | No information available. | None. |

| Ingredients | CAS No | Toxicity to Daphnia | | |
|---|---|---|---|---|
| | | EC50 / 48h | NOEC / 21 day | M Factor |
| silver | 7440-22-4 | No information available. | No information available. | No information available. |
| Reaction product: bisphenol-A-(epichlorohydrin) | 25068-38-6 | 1.1 - 2.8 mg/L (Daphnia magna) | 0.3 mg/L (Read-across) | None. |
| 2,3-epoxypropyl o-tolyl ether | 2210-79-9 | 16 mg/L (Daphnia magna) | No information available. | None. |

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| Ingredients | CAS No | Toxicity to Algae | | |
|---|---|---|---|---|
| | | EC50 / 96h or 72h | NOEC / 96h or 72h | M Factor |
| silver | 7440-22-4 | No information available. | No information available. | No information available. |
| Reaction product: bisphenol-A-(epichlorohydrin) | 25068-38-6 | 9.4 mg/L/72hr (Green algae) (Read-across) | 2.8 mg/L/72hr (Read-across) | None. |
| 2,3-epoxypropyl o-tolyl ether | 2210-79-9 | 5.1 mg/L/72hr (Green algae) | No information available. | None. |

**12.2 Persistence and degradability**

: The product itself has not been tested.
Contains the following chemicals which are not readily biodegradable: silver; Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether.

**12.3 Bioaccumulation potential**

: The product itself has not been tested. See the following data for ingredient information.

| Components | Partition coefficient n-octanol/water (log Kow) | Bioconcentration factor (BCF) |
|---|---|---|
| Reaction product: bisphenol-A-(epichlorohydrin) (CAS 25068-38-6) | > 2.915 | 31 |
| 2,3-epoxypropyl o-tolyl ether (CAS 2210-79-9) | 2.5 | No information available. |

**12.4 Mobility in soil** : The product itself has not been tested.

**12.5 Results of PBT and vPvB assessment**

: This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

**12.6 Endocrine disrupting properties**

: None known or reported by the manufacturer.

**12.7 Other Adverse Environmental effects**

: None known or reported by the manufacturer.

**12.8 Additional information** : None known or reported by the manufacturer.

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods:

**Handling for Disposal** : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way.

**Methods of Disposal** : Empty containers retain residue (liquid and/or vapour) and can be dangerous. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not allow this material to drain into sewers/water supplies.
Dispose of in accordance with the European Directives on waste and hazardous waste. Waste must be classified and labelled prior to recycling or disposal. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

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## SECTION 14. TRANSPORTATION INFORMATION

| *Regulatory Information* | 14.1 UN Number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing Group | *Label* |
|---|---|---|---|---|---|
| ADR/RID | UN3082 | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. [Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether] | 9 | III |  |
| **EU ADR/RID Classification Code** | M6 - Pollutant to the aquatic environment, liquid | | | | |
| **EU ADR / RID Hazard Identification Number** | 90 - environmentally hazardous substance; miscellaneous dangerous substances | | | | |
| **ADR/RID Additional information** | May be shipped as Limited Quantity when transported in containers no larger than 5.0 Litres; in packages not exceeding 30 kg gross mass. The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material.<br>Tunnel Code: 3(-) | | | | |
| ICAO/IATA | UN3082 | Environmentally hazardous substance, liquid, n.o.s. [Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether] | 9 | III |  |
| **ICAO/IATA Additional information** | Refer to the appropriate Packing Instruction, prior to shipping this material. Review all State and Operator Variations, prior to shipping this material.<br>The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material. | | | | |
| IMDG | UN3082 | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. [Reaction product: bisphenol-A-(epichlorohydrin); 2,3-epoxypropyl o-tolyl ether] | 9 | III |  |
| **IMDG Additional information** | May be shipped as Limited Quantity when transported in containers no larger than 5.0 Litres; in packages not exceeding 30 kg gross mass.<br>The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material.<br>EmS No. F-A,S-F | | | | |

**14.5 Environmental hazards** : This product meets the criteria for an environmentally hazardous material according to the IMDG Code. See Section 12 for more environmental information.

**14.6 Special precautions for user**

: Appropriate advice on safety must accompany the package. Avoid release to the environment.

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

: Not applicable.

## SECTION 15. REGULATORY INFORMATION

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

# SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

: Classification according to Regulation (EC) No. 1272/2008 on the classification of hazardous mixtures.

Authorisations
Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:
None of the components are specifically listed.

Restrictions on use
Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended
Refer to restrictions found in REACH Annex XVII item 75.

Directive 2012/18/EU (Seveso III) on the control of major-accident hazards involving dangerous substances:
None.

Directive 98/24/EC on the protection of the health and safety of workers from risks related to chemical agents at work:
Reaction product: bisphenol-A-(epichlorohydrin) (CAS # 25068-38-6)
2,3-epoxypropyl o-tolyl ether (CAS # 2210-79-9)

Directive 94/33/EC on the protection of young people at work:
Reaction product: bisphenol-A-(epichlorohydrin) (CAS # 25068-38-6)
2,3-epoxypropyl o-tolyl ether (CAS # 2210-79-9)
This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended [including Regulation (EU) 2023/707].

Follow national regulation for work with chemical agents.

German legislation on water endangering substances AWSV - Water contaminating class (Germany): 2 (self classified)

**15.2 Chemical safety assessment**

: A chemical safety assessment has not been carried out by the Manufacturer of this product.

Parker Hannifin Ltd.,
Engineered Materials Group
Chomerics Division Europe
Unit 6 Century Point Halifax Road
High Wycombe Bucks, HP12 3SL
United Kingdom
Telephone: 044 (0) 1494 455 400



# SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

## SECTION 16. OTHER INFORMATION

**Legend** : ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE: Acute Toxicity Estimate
CAS: Chemical Abstract Services
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
EC: European Community
EC50: Effective Concentration 50%
EEC: European Economic Community
EN: European Standard
ERG: Emergency Response Guidebook
EU: European Union
HSDB: Hazardous Substances Data Bank
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
IMDG: International Maritime Dangerous Goods
LC: Lethal Concentration
LD: Lethal Dose
NOEC: No observable effect concentration
OECD: Organisation for Economic Co-operation and Development
OEL: National occupational exposure limits
PEL: Permissible exposure limit
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
RTECS: Registry of Toxic Effects of Chemical Substances
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TWA: Time Weighted Average
WEL: Workplace Exposure Limit

**Information Source** : 1. Material Safety Data Sheet from manufacturer.
2. Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases
3. European Chemicals Agency, Classification Legislation
4. OECD - The Global Portal to Information on Chemical Substances

**Preparation Date (dd/mm/yyyy)** : 14/10/2019

**Reviewed Date SDS (dd/mm/yyyy)** : 22/02/2024

**Revision No.** : 5

**Revision Information** : (M)SDS sections updated All (format change)

**Regulation and Procedure** :

# SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

Skin irritation; Expert judgement
Eye irritation ;Expert judgement
Skin sensitization;Expert judgement
Germ cell mutagenicity ;Expert judgement
Aquatic toxicity; Expert judgement

H-phrases (full-text)
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H341 - Suspected of causing genetic defects <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H411 - Toxic to aquatic life with long lasting effects.

**Other special considerations for handling**

: Provide adequate information, instruction and training for operators.

| | |
|---|---|
| **Prepared for:**<br>Parker Hannifin Corp.<br>77 Dragon Court<br>Woburn, MA, USA 01888<br>Telephone: 001-781-935-4850<br>http://www.parker.com<br>Direct all enquiries to Parker Hannifin. | Parker Chomerics |
| **Prepared by:**<br>ICC The Compliance Center Inc.<br>http://www.thecompliancecenter.com | icc ComplianceCenter |

## DISCLAIMER

This Safety Data Sheet was prepared by ICC The Compliance Center Inc. using information provided by Parker Hannifin Corporation and CCOHS' Web Information Service. The information in the Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Parker Hannifin Corporation expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc. and Parker Hannifin Corporation.

**END OF DOCUMENT**

Parker Hannifin Corp.
Chomerics Division
77 Dragon Court
Woburn, MA, USA, 01888
Telephone: (781) 935-4850



# SAFETY DATA SHEET

## SECTION 1. IDENTIFICATION

**Product identifier used on the label**

: **CHO-BOND® 29 EPOXY HARDENER**

**Product Code(s)** : Hardener 29

**Recommended use of the chemical and restrictions on use**

: Hardener.
No restrictions on use known.

**Chemical family** : Mixture of: Amines; Phenol

**SDS number** : PHC-048

**Name, address, and telephone number of the manufacturer:**

**Parker Hannifin Corp.**
Chomerics Division
77 Dragon Court
Woburn, MA, USA
01888

Manufacturer's Telephone # : (781) 935-4850

**24 Hr. Emergency Tel #** : INFOTRAC - (800) 535-5053 (Within Continental US); (352) 323-3500 (Outside US)

**Name, address, and telephone number of the supplier:**

Refer to manufacturer

## SECTION 2. HAZARDS IDENTIFICATION

**Classification of the chemical**

Amber liquid. Amine odor.

*Most important hazards:*
Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause respiratory irritation. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.
Harmful to aquatic life with long lasting effects. Avoid release to the environment. See Section 12 for more environmental information.

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:
- Acute toxicity - Category 4 (Dermal)
- Skin corrosion/irritation - Category 1B
- Skin sensitization - Category 1
- Specific target organ toxicity, single exposure - Category 3 (Respiratory irritation)

**Label elements**

*Hazard pictogram(s)*

*Signal Word*
DANGER!

*Hazard statement(s)*
Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause respiratory irritation.

# SAFETY DATA SHEET

*Precautionary statement(s)*

Do not breath mist or vapor. Wash hands and face thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/clothing and eye/face protection.

Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
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.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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

Dispose of contents/container in accordance with local regulation.

**Other hazards**

*Other hazards which do not result in classification:*
May burn if heated to extreme temperatures. Vapors are heavier than air and may spread along floors. Toxic fumes, gases or vapors may evolve on burning. Exposure to low vapor concentrations may cause swelling (edema) of the eyes, resulting in blurring of vision with a bluish haze and/or appearance of halos around lights. Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights. Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, could be formed.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

| Chemical name | Common name and synonyms | CAS # | Concentration (% by weight) |
|---|---|---|---|
| **Triethylenetetramine, propoxylated** | 1,2-Ethanediamine, N,N'-bis(2-aminoethyl)-, polymer with methyloxirane | 26950-63-0 | **60.0 - 100.0** |
| **Triethylenetetramine** | N,N'-Bis(2-aminoethyl)ethylenediamine<br>TETA | 112-24-3 | **15.0 - 40.0** |
| **2,4,6-tris(dimethylaminomethyl)phenol** | Mesitol, alpha,alpha',alpha''-tris(dimethylamino)- | 90-72-2 | **5.0 - 10.0** |
| **N-(3-(trimethoxysilyl)propyl)ethylenediamine** | N-[3-(Trimethoxysilyl)propyl]-1,2-ethanediamine<br>Aminoethylamino propyltrimethoxy silane | 1760-24-3 | **< 1.0** |

The exact concentrations of the above listed chemicals are being withheld as a trade secret as allowed by 29CFR1910.1200.

## SECTION 4: FIRST-AID MEASURES

**Description of first aid measures**

*Ingestion* : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. Never give anything by mouth to an unconscious person.

*Inhalation* : If inhaled: Remove person to fresh air and keep comfortable for breathing. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Immediately call a POISON CENTER or doctor/physician.

# SAFETY DATA SHEET

*Skin contact* : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Flush with large amounts of water for 15 minutes. Immediately call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse.

*Eye contact* : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eyes with water for at least 15 minutes. Do not rub area of contact. Immediately call a POISON CENTER or doctor/physician.

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

: Harmful in contact with skin. Symptoms may include pain, nausea, vomiting, muscle weakness, loss of coordination, shock and collapse.
Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring. .
Direct eye contact may produce severe irritation with possible eye damage. Symptoms may include severe pain, tearing, redness, swelling and blurred vision. May cause irreversible eye damage.
May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
May cause respiratory irritation. Symptoms may include coughing, choking and wheezing.
Exposure to low vapor concentrations may cause swelling (edema) of the eyes, resulting in blurring of vision with a bluish haze and/or appearance of halos around lights.
May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations and bleeding.
Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights.
Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, could be formed.

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

: Immediate medical attention is required. Causes burns.
Provide general supportive measures and 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**

: Not considered flammable. However, may burn if exposed to extreme heat and flame. Vapors are heavier than air and may spread along floors. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure. Toxic fumes, gases or vapors may evolve on burning.

**Flammability classification (OSHA 29 CFR 1910.106)**

: Not classified as flammable.

**Hazardous combustion products**

: Carbon oxides; Nitrogen oxides (NOx); Ammonia; Hydrogen cyanide (hydrocyanic acid); Aldehydes; Ketones; Other unidentified organic compounds .

**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. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

# SAFETY DATA SHEET

*Special fire-fighting procedures*

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

: Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Wear chemically resistant personal protective equipment during cleanup. Refer to protective measures listed in sections 7 and 8.

**Environmental precautions** : Avoid release to the environment. Prevent product from entering drains, sewers, waterways and soil. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

**Methods and material for containment and cleaning up**

: Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product. Contact the proper local authorities. For waste disposal, see Section 13 of the SDS.

**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): None known.

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

## SECTION 7: HANDLING AND STORAGE

**Precautions for safe handling**

: Persons with recurrent skin eczema or sensitization problems should be excluded from working with this product. Once a person is sensitized, no further exposure to the material that caused the sensitization should be permitted.
Use only outdoors or in a well-ventilated area. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and direct flame. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Empty containers retain residue (liquid and/or vapor) and can be dangerous.

**Conditions for safe storage** : Store in cool/well-ventilated place. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Keep away from incompatibles.

**Incompatible materials** : Strong oxidizing agents; Strong acids; Aldehydes; Ketones; Nitrogen compounds.

# SAFETY DATA SHEET

## SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Limits:**

| Chemical Name | ACGIH TLV | | OSHA PEL | |
|---|---|---|---|---|
| | TWA | STEL | PEL | STEL |
| Triethylenetetramine, propoxylated | N/Av | N/Av | N/Av | N/Av |
| Triethylenetetramine | 1 ppm (AIHA WEEL) (skin) | N/Av | N/Av | N/Av |
| 2,4,6-tris(dimethylaminomethyl)phenol | N/Av | N/Av | N/Av | N/Av |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | N/Av | N/Av | N/Av | N/Av |

**ACGIH - Biological Exposure Indices:**
No biological exposure limits noted for the ingredient(s).

**Exposure controls**

**Ventilation and engineering measures**
: Use only in well-ventilated areas. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.

**Respiratory protection** : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. If airborne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. 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. Advice should be sought from respiratory protection specialists.

**Skin protection** : Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Wear resistant clothing and boots. Depending on conditions of use, an impervious apron should be worn.

**Eye / face protection** : Wear eye/face protection. Chemical splash goggles are recommended. A full face shield may also be necessary.

**Other protective equipment** : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

**General hygiene considerations**
: Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing must not be allowed out of the workplace.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : Amber liquid.
**Odor** : amine-like
**Odor threshold** : N/Av
**pH** : N/Av
**Melting/Freezing point** : N/Av
**Initial boiling point and boiling range**
: > 130°C (266°F) (based on ingredients)
**Flash point** : > 93.3°C (200°F)

# SAFETY DATA SHEET

| | | |
|---|---|---|
| **Flashpoint (Method)** | : | closed cup |
| **Evaporation rate (BuAe = 1)** | : | N/Av |
| **Flammability (solid, gas)** | : | Not applicable. |
| **Lower flammable limit (% by vol.)** | : | N/Av |
| **Upper flammable limit (% by vol.)** | : | N/Av |
| **Oxidizing properties** | : | None known. |
| **Explosive properties** | : | Not explosive |
| **Vapor pressure** | : | N/Av |
| **Vapor density** | : | > 1 (Air = 1) |
| **Relative density / Specific gravity** | : | 1 |
| **Solubility in water** | : | Not miscible. |
| **Other solubility(ies)** | : | N/Av |
| **Partition coefficient: n-octanol/water or Coefficient of water/oil distribution** | : | N/Av |
| **Auto-ignition temperature** | : | N/Av |
| **Decomposition temperature** | : | N/Av |
| **Viscosity** | : | N/Av |
| **Volatiles (% by weight)** | : | N/Av |
| **Volatile organic Compounds (VOC's)** | : | N/Av |
| **Absolute pressure of container** | : | N/Ap |
| **Flame projection length** | : | N/Ap |
| **Other physical/chemical comments** | : | No additional information. |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| **Reactivity** | : | Not normally reactive. Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, could be formed. |
| **Chemical stability** | : | Stable under normal conditions. |
| **Possibility of hazardous reactions** | : | Hazardous polymerization does not occur. |
| **Conditions to avoid** | : | Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials. |
| **Incompatible materials** | : | Strong oxidizing agents; Strong acids; Aldehydes; Ketones; Nitrogen compounds |
| **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** | : | YES |

# SAFETY DATA SHEET

## Potential Health Effects:

**Signs and symptoms of short-term (acute) exposure**

*Sign and symptoms Inhalation*

: May cause respiratory irritation. Symptoms may include coughing, choking and wheezing.

*Sign and symptoms ingestion*

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

*Sign and symptoms skin* : Causes burns. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring. Can be absorbed through skin.

*Sign and symptoms eyes* : Causes burns. Prolonged contact may cause corrosive burns and eye damage. Exposure to low vapor concentrations may cause swelling (edema) of the eyes, resulting in blurring of vision with a bluish haze and/or appearance of halos around lights.

**Potential Chronic Health Effects**

: Chronic skin contact with low concentrations may cause dermatitis.
Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights.

**Mutagenicity** : No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity** : Not classifiable as a human carcinogen, based on currently available data. No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

**Reproductive effects & Teratogenicity**

: This product is not expected to cause reproductive or developmental effects.

**Sensitization to material** : 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:
Skin sensitization - Category 1. May cause an allergic skin reaction.
May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
Not expected to be a respiratory sensitizer.

**Specific target organ effects** : 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. May cause respiratory irritation.

According to the classification criteria of U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015), this product is not expected to cause target organ toxicity through repeated exposures.

**Medical conditions aggravated by overexposure**

: Pre-existing skin, eye and respiratory disorders.

**Synergistic materials** : None known or reported by the manufacturer.

# SAFETY DATA SHEET

**Toxicological data** : Not classified for acute toxicity based on available data.
No data is available on the product itself. The calculated ATE values for this mixture are:
ATE oral = 2749 - 3360 mg/kg
ATE dermal = 1541 - 2149 mg/kg

See below for individual ingredient acute toxicity data.

| Chemical name | $LC_{50}$ (4hr) inh, rat | $LD_{50}$ (Oral, rat) | $LD_{50}$ (Rabbit, dermal) |
|---|---|---|---|
| Triethylenetetramine, propoxylated | N/Av | > 2000 mg/kg | N/Av |
| Triethylenetetramine | N/Av | 4340 mg/kg | 805 mg/kg |
| 2,4,6-tris(dimethylaminomethyl)phenol | N/Av | 2169 mg/kg | 1280 mg/kg |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | > 1.49, < 2.44 mg/L (aerosol) | 1897 mg/kg | 16 160 mg/kg |

**Other important toxicological hazards**
: Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, could be formed. Under certain conditions, nitrites (a nitrosating agent), can react with amines to form nitrosamines, many of which are carcinogenic in animal tests.

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity** : Harmful to aquatic life with long lasting effects. No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. The product contains the following substances which are hazardous for the environment: Triethylenetetramine; N-(3-(trimethoxysilyl)propyl)ethylenediamine.

See the following tables for individual ingredient ecotoxicity data.

***Ecotoxicity data:***

| Ingredients | CAS No | Toxicity to Fish | | |
|---|---|---|---|---|
| | | LC50 / 96h | NOEC / 21 day | M Factor |
| Triethylenetetramine, propoxylated | 26950-63-0 | N/Av | N/Av | None. |
| Triethylenetetramine | 112-24-3 | 570 mg/L (Guppy) | N/Av | None. |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | 180 - 240 mg/L (Rainbow trout) | N/Av | None. |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | > 100 mg/L (Rainbow trout) | N/Av | None. |

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# SAFETY DATA SHEET

| Ingredients | CAS No | Toxicity to Daphnia | | |
|---|---|---|---|---|
| | | EC50 / 48h | NOEC / 21 day | M Factor |
| Triethylenetetramine, propoxylated | 26950-63-0 | N/Av | N/Av | None. |
| Triethylenetetramine | 112-24-3 | 31.1 mg/L (Daphnia magna) | N/Av | None. |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | 718 mg/L (grass shrimp) | N/Av | None. |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | 90 mg/L (Daphnia magna) | ≥ 1 mg/L | None. |

| Ingredients | CAS No | Toxicity to Algae | | |
|---|---|---|---|---|
| | | EC50 / 96h or 72h | NOEC / 96h or 72h | M Factor |
| Triethylenetetramine, propoxylated | 26950-63-0 | N/Av | N/Av | None. |
| Triethylenetetramine | 112-24-3 | 20 mg/L/72hr (Green algae) | N/Av | None. |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | 84 mg/L/72hr (Green algae) | N/Av | None. |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | 8.8 mg/L/72hr (Green algae) | 3.1 mg/L/72hr | None. |

**Persistence and degradability**

: The product itself has not been tested.
Contains the following chemicals which are not readily biodegradable: Triethylenetetramine; 2,4,6-tris(dimethylaminomethyl)phenol; N-(3-(trimethoxysilyl)propyl)ethylenediamine.

**Bioaccumulation potential** : The product itself has not been tested. See the following data for ingredient information.

| Components | Partition coefficient n-octanol/water (log Kow) | Bioconcentration factor (BCF) |
|---|---|---|
| Triethylenetetramine (CAS 112-24-3) | - 1.4 | N/Av |
| 2,4,6-tris(dimethylaminomethyl)phenol (CAS 90-72-2) | 0.219 | 3.0 (Fish) (calculated) |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine (CAS 1760-24-3) | 1.67 | N/Av |

**Mobility in soil** : The product itself has not been tested.

**Other Adverse Environmental effects**

: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

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## SECTION 13: DISPOSAL CONSIDERATIONS

**Handling for Disposal** : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way.
Empty containers retain residue (liquid and/or vapor) and can be dangerous. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

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

**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

| Regulatory Information | UN Number | UN proper shipping name | Transport hazard class(es) | Packing Group | Label |
|---|---|---|---|---|---|
| 49CFR/DOT | UN2735 | Amines, liquid, corrosive, n.o.s. (Triethylenetetramine; Triethylenetetramine, propoxylated) | 8 | II |  |
| **49CFR/DOT Additional information** | May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Refer to 49 CFR Section 173.154. | | | | |
| TDG | UN2735 | AMINES, LIQUID, CORROSIVE, N.O.S. (Triethylenetetramine; Triethylenetetramine, propoxylated) | 8 | II |  |
| **TDG Additional information** | May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDG, refer to Section 1.17 for additional exemption requirements, if shipping under this exemption. | | | | |
| ICAO/IATA | UN2735 | Amines, liquid, corrosive, n.o.s. (Triethylenetetramine; Triethylenetetramine, propoxylated) | 8 | II |  |
| **ICAO/IATA Additional information** | Refer to the appropriate Packing Instruction, prior to shipping this material. Review all State and Operator Variations, prior to shipping this material. | | | | |
| IMDG | UN2735 | AMINES, LIQUID, CORROSIVE, N.O.S. (Triethylenetetramine; Triethylenetetramine, propoxylated) | 8 | II |  |
| **IMDG Additional information** | May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. | | | | |

**Special precautions for user** : Appropriate advice on safety must accompany the package. Avoid release to the environment.

**Environmental hazards** : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See Section 12 for more environmental information.

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

: Not applicable.

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## 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 |
| Triethylenetetramine, propoxylated | 26950-63-0 | Yes | N/Ap | N/Av | No | NS |
| Triethylenetetramine | 112-24-3 | Yes | None. | None. | No | N/Ap |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | Yes | None. | None. | No | N/Ap |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | Yes | None. | None. | No | N/Ap |

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes:
Health hazards (Acute toxicity - Dermal; Skin corrosion; Skin sensitization; Eye Damage; Specific target organ toxicity, single exposure)
Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds or 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 |
| Triethylenetetramine, propoxylated | 26950-63-0 | No | N/Ap | No | No | No | No | No | No |
| Triethylenetetramine | 112-24-3 | No | N/Ap | No | Yes | No | Yes | Yes | No |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | No | N/Ap | No | No | No | No | No | No |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | No | N/Ap | No | No | No | No | No | No |

**Canadian Information:**

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Canadian National Pollutant Release Inventory (NPRI): This product does not contain any substances listed on the NPRI.

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

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**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 | New Zealand IOC |
|---|---|---|---|---|---|---|---|---|
| Triethylenetetramine, propoxylated | 26950-63-0 | 500-055-5 | Present | | (7)-1154 | KE-02914 | Present | |
| Triethylenetetramine | 112-24-3 | 203-950-6 | Present | Present | (2)-163 | KE-02911 | Present | HSR003570 |
| 2,4,6-tris(dimethylaminomethyl)phenol | 90-72-2 | 202-013-9 | Present | Present | (3)-776; (3)-762; (3)-714 | KE-34802 | Present | HSR003549 |
| N-(3-(trimethoxysilyl)propyl)ethylenediamine | 1760-24-3 | 217-164-6 | Present | Present | (2)-2083; (2)-2059 | KE-34385 | Present | HSR003831 |

## SECTION 16. OTHER INFORMATION

**Legend** : ACGIH: American Conference of Governmental Industrial Hygienists
AICS: Australian Inventory of Chemical Substances
AIHA: American Industrial Hygiene Association
ATE: Acute Toxicity Estimate
CA: California
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
EC50: Effective Concentration 50%
EINECS: European Inventory of Existing Commercial chemical Substances
ENCS: Existing and New Chemical Substances
EPA: Environmental Protection Agency
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
ICAO: International Civil Aviation Organisation
IECSC: Inventory of Existing Chemical Substances
IMDG: International Maritime Dangerous Goods
Inh: Inhalation
IOC: Inventory of Chemicals
KECI: Korean Existing Chemicals Inventory
KECL: Korean Existing Chemicals List
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NOEC: No observable effect concentration
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
PICCS: Philippine Inventory of Chemicals and Chemical Substances

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QSAR: Quantitative structure-activity relationship
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
SCBA: Self-Contained Breathing Apparatus
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TLV: Threshold Limit Values
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WEEL: Workplace Environmental Exposure Level
WHMIS: Workplace Hazardous Materials Identification System

**References** : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2017.
2. International Agency for Research on Cancer Monographs, searched 2017.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2017 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - March 2015 version.
6. California Proposition 65 List - January 27, 2017 version.
7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2017.

**Preparation Date (mm/dd/yyyy)**

: 05/03/2017

**Other special considerations for handling**

: Provide adequate information, instruction and training for operators.

| | |
|---|---|
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