

**EPOCAST® 50-A1 US**

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
| Version | Revision Date: | SDS Number:  | Date of last issue: -           |
| 1.0     | 04/06/2017     | 400001008922 | Date of first issue: 04/06/2017 |

**SECTION 1. IDENTIFICATION**

Product name : EPOCAST® 50-A1 US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : 2795 Slough Avenue  
Mississauga, ON L4T 1G2,  
Canada  
Telephone : +1 905 678 9150

E-mail address of person responsible for the SDS : MSDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

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

Recommended use : Epoxy constituents

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the Hazardous Products Regulations**

Skin irritation : Category 2  
Eye irritation : Category 2A  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 2  
Acute aquatic toxicity : Category 2  
Chronic aquatic toxicity : Category 2

**GHS label elements**

Hazard pictograms : Three GHS hazard pictograms in red diamond borders. The first shows a silhouette of a person with a starburst on the chest (H315). The second shows a black exclamation mark (H317, H319). The third shows a dead tree and fish (H361, H411).

Signal word : Warning

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H361 Suspected of damaging fertility or the unborn child.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P201 Obtain special instructions before use.



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P202 Do not handle until all safety precautions have been read and understood.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P391 Collect spillage.

**Storage:**

P405 Store locked up.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

| Chemical name                           | CAS-No.     | Concentration (% w/w) |
|-----------------------------------------|-------------|-----------------------|
| Bisphenol A epoxy resin                 | 25068-38-6  | 30 - 50               |
| epoxy phenol novolac resin              | 28064-14-4  | 30 - 50               |
| Silsesquioxanes, Ph, hydroxy-terminated | 181186-39-0 | 10 - 20               |
| tris(methylphenyl) phosphate            | 1330-78-5   | 10 - 20               |
| Phenol, 4-nonyl-, branched              | 84852-15-3  | 0.1 - 1               |

**SECTION 4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.



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- If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Induce vomiting immediately and call a physician.  
Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Notes to physician : No information available.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not use a solid water stream as it may scatter and spread fire.  
Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : No data is available on the product itself.
- Specific extinguishing methods : No data is available on the product itself.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.



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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- |                                                                     |                                                                                                                                                                                           |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.<br>Evacuate personnel to safe areas.<br>Ensure adequate ventilation.<br>In case of inadequate ventilation wear respiratory protection.               |
| Environmental precautions                                           | : Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up               | : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).<br>Keep in suitable, closed containers for disposal.                             |

**SECTION 7. HANDLING AND STORAGE**

- |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advice on protection against fire and explosion | : Normal measures for preventive fire protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Advice on safe handling                         | : Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>Dispose of rinse water in accordance with local and national regulations.<br>Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. |
| Conditions for safe storage                     | : Keep container tightly closed in a dry and well-ventilated place.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Observe label precautions.<br>Electrical installations / working materials must comply with the technological safety standards.                                                                                                                                                                                                                                |

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

- |                        |                                                                                                                                                                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Respiratory protection | : In the case of vapour formation use a respirator with an approved filter.<br>Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.<br>Respirator selection must be based on known or anticipated |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## Hand protection

Material : butyl-rubber  
Break through time : > 8 h

Material : Nitrile rubber  
Material : Neoprene  
Break through time : 10 - 480 min

## Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.  
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

## Eye protection

: Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.  
Ensure that eyewash stations and safety showers are close to the workstation location.

## Skin and body protection

: Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

## Hygiene measures

: When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : liquid

Colour : light yellow

Odour : slight

Odour Threshold : No data is available on the product itself.

pH : No data is available on the product itself.

Melting point/freezing point : No data available

Boiling point : > 200 °C

Flash point : > 95 °C  
Method: closed cup

Evaporation rate : No data is available on the product itself.



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|                                                    |                                               |
|----------------------------------------------------|-----------------------------------------------|
| Flammability (solid, gas)                          | : No data is available on the product itself. |
| Flammability (liquids)                             | : No data is available on the product itself. |
| Upper explosion limit                              | : No data is available on the product itself. |
| Lower explosion limit                              | : No data is available on the product itself. |
| Vapour pressure                                    | : < 1.5 hPa (20 °C)                           |
| Relative vapour density                            | : No data is available on the product itself. |
| Relative density                                   | : 1.21                                        |
| Density                                            | : 1.2 g/cm <sup>3</sup> (25 °C)               |
| Solubility(ies)                                    |                                               |
| Water solubility                                   | : partly soluble (20 °C)                      |
| Solubility in other solvents                       | : No data is available on the product itself. |
| Partition coefficient: n-octanol/water             | : No data is available on the product itself. |
| Auto-ignition temperature                          | : No data is available on the product itself. |
| Decomposition temperature                          | : > 200 °C                                    |
| Self-Accelerating decomposition temperature (SADT) | : No data is available on the product itself. |
| Viscosity                                          |                                               |
| Viscosity, dynamic                                 | : 7,770 mPa.s (20 °C)                         |
| Explosive properties                               | : No data is available on the product itself. |
| Oxidizing properties                               | : No data is available on the product itself. |
| Molecular weight                                   | : No data available                           |
| Particle size                                      | : No data is available on the product itself. |

**SECTION 10. STABILITY AND REACTIVITY**

|                                    |                                                            |
|------------------------------------|------------------------------------------------------------|
| Reactivity                         | : Stable under recommended storage conditions.             |
| Chemical stability                 | : No decomposition if stored and applied as directed.      |
| Possibility of hazardous reactions | : Stable under normal conditions.                          |
| Conditions to avoid                | : No data available                                        |
| Incompatible materials             | : Strong acids and strong bases<br>Strong oxidizing agents |
| Hazardous decomposition            | : Burning produces noxious and toxic fumes.                |

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|          |                                   |
|----------|-----------------------------------|
| products | Carbon dioxide (CO <sub>2</sub> ) |
|          | Carbon monoxide                   |
|          | Oxides of phosphorus              |
|          | Halogenated compounds             |

**SECTION 11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure : No data is available on the product itself.

**Acute toxicity****Components:**

Bisphenol A epoxy resin:

|                               |                                                                 |
|-------------------------------|-----------------------------------------------------------------|
| Acute oral toxicityComponents | : LD50 (Rat, female): > 2,000 mg/kg                             |
|                               | Method: OECD Test Guideline 420                                 |
|                               | Assessment: The substance or mixture has no acute oral toxicity |

epoxy phenol novolac resin:

|                               |                                                                 |
|-------------------------------|-----------------------------------------------------------------|
| Acute oral toxicityComponents | : LD50 (Rat, female): > 2,000 mg/kg                             |
|                               | Method: OECD Test Guideline 420                                 |
|                               | Assessment: The substance or mixture has no acute oral toxicity |

tris(methylphenyl) phosphate:

|                               |                              |
|-------------------------------|------------------------------|
| Acute oral toxicityComponents | : LD50 (Rat): > 20,000 mg/kg |
|-------------------------------|------------------------------|

Phenol, 4-nonyl-, branched:

|                               |                                            |
|-------------------------------|--------------------------------------------|
| Acute oral toxicityComponents | : LD50 (Rat, male and female): 1,412 mg/kg |
|-------------------------------|--------------------------------------------|

Acute inhalation toxicity - Product

|                                      |
|--------------------------------------|
| : Acute toxicity estimate: > 40 mg/l |
| Exposure time: 4 h                   |
| Test atmosphere: vapour              |
| Method: Calculation method           |

Acute dermal toxicity - Product

|                                           |
|-------------------------------------------|
| : Acute toxicity estimate : > 5,000 mg/kg |
| Method: Calculation method                |

Acute toxicity (other routes of administration) : No data available

**Skin corrosion/irritation****Product:**

Remarks: May cause skin irritation and/or dermatitis.

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**Serious eye damage/eye irritation****Components:**

Bisphenol A epoxy resin:

Species: Rabbit

Result: Irritating to eyes.

Assessment: Mild eye irritant

Method: OECD Test Guideline 405

epoxy phenol novolac resin:

Species: Rabbit

Result: Irritating to eyes.

Method: OECD Test Guideline 405

tris(methylphenyl) phosphate:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Phenol, 4-nonyl-, branched:

Result: Risk of serious damage to eyes.

**Respiratory or skin sensitisation****Product:**

Remarks: Causes sensitisation.

**Components:**

Phenol, 4-nonyl-, branched:

Assessment: Causes severe skin burns and eye damage.

**Germ cell mutagenicity****Components:**

Bisphenol A epoxy resin:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: positive

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: positive

epoxy phenol novolac resin:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation

Result: positive

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation

Result: positive

tris(methylphenyl) phosphate:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation

Result: negative



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**Components:**

Bisphenol A epoxy resin:

Genotoxicity in vivo

: Cell type: Germ  
Application Route: Oral  
Method: OECD Test Guideline 478  
Result: negative

Cell type: Somatic  
Application Route: Oral  
Dose: 0 - 5000 mg/kg  
Method: OPPTS 870.5395  
Result: negative

epoxy phenol novolac resin:

Genotoxicity in vivo

: Cell type: Germ  
Application Route: Oral  
Result: negative

Cell type: Somatic  
Application Route: Oral  
Dose: 0 - 5000 mg/kg  
Result: negative

**Components:**

Bisphenol A epoxy resin:

Germ cell mutagenicity-  
Assessment

: Weight of evidence does not support classification as a germ  
cell mutagen.

tris(methylphenyl) phosphate:

Germ cell mutagenicity-  
Assessment

: In vitro tests did not show mutagenic effects

Germ cell mutagenicity-  
Assessment

: No data available

**Carcinogenicity****Components:**

Bisphenol A epoxy resin:

Species: Rat, (male and female)

Application Route: Oral

Exposure time: 24 month(s)

Dose: 15 mg/kg

Frequency of Treatment: 7 days/week

Method: OECD Test Guideline 453

Result: negative

Species: Mouse, (male)

Application Route: Dermal

Exposure time: 24 month(s)

Dose: 0.1 mg/kg

Frequency of Treatment: 3 days/week





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Method: OECD Test Guideline 453  
Result: negative

Species: Rat, (female)  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: 1 mg/kg  
Frequency of Treatment: 5 days/week  
Method: OECD Test Guideline 453  
Result: negative

epoxy phenol novolac resin:  
Species: Rat, (male and female)  
Application Route: Oral  
Exposure time: 24 month(s)  
Dose: 15 mg/kg  
Frequency of Treatment: 7 daily  
Method: OECD Test Guideline 453  
Result: negative

Species: Mouse, (male)  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: .1 mg/kg  
Frequency of Treatment: 3 daily  
Method: OECD Test Guideline 453  
Result: negative

Species: Rat, (female)  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: 1 mg/kg  
Frequency of Treatment: 5 daily  
Method: OECD Test Guideline 453  
Result: negative

**Components:**

tris(methylphenyl) phosphate:

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

**ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Reproductive toxicity****Components:**

Bisphenol A epoxy resin:  
Effects on fertility

: Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Dose: >750 milligram per kilogram  
General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight  
General Toxicity F1: No-observed-effect level: 540 mg/kg



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body weight

Symptoms: No adverse effects

Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic development were detected.

epoxy phenol novolac resin:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic development were detected.

tris(methylphenyl) phosphate:

Species: Rat, male and female

Application Route: Oral

Target Organs: Testes

Method: OECD Test Guideline 415

Target Organs: Ovary

**Components:**

Bisphenol A epoxy resin:

Effects on foetal development

: Species: Rabbit, female

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight

Method: Other guidelines

Result: No teratogenic effects

Species: Rabbit, female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Species: Rat, female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level: 180 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

epoxy phenol novolac resin:

Species: Rabbit, female

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight

Result: No teratogenic effects

Species: Rabbit, female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight

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Method: OECD Test Guideline 414  
Result: No teratogenic effects

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
180 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

tris(methylphenyl) phosphate:

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No-observed-effect level: 20 mg/kg  
body weight  
Method: OPPTS 870.3700  
Result: Teratogenic effects

Phenol, 4-nonyl-, branched:

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
75 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

**Components:**

tris(methylphenyl) phosphate:  
Reproductive toxicity -  
Assessment

: Some evidence of adverse effects on sexual function and  
fertility, and/or on development, based on animal experiments.

Phenol, 4-nonyl-, branched:  
Reproductive toxicity -  
Assessment

: Suspected human reproductive toxicant

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:**

Bisphenol A epoxy resin:  
Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: Ingestion  
Exposure time: 14 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
NOEL: 10 mg/kg



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Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 5 d  
Method: Subchronic toxicity

Species: Mouse, male  
NOAEL: 100 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 3 d  
Method: Subchronic toxicity

epoxy phenol novolac resin:  
Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: Ingestion  
Exposure time: 14 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
NOEL: 10 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 5 d  
Method: Subchronic toxicity

Species: Mouse, male  
NOAEL: 100 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 3 d  
Method: Subchronic toxicity

tris(methylphenyl) phosphate:  
Species: Rat, male and female  
NOEL: 1000 mg/kg  
Application Route: Ingestion  
Exposure time: 2,160 h  
Method: Subchronic toxicity

Phenol, 4-nonyl-, branched:  
Species: Rat, male and female  
NOAEL: 100 mg/kg  
Application Route: Ingestion  
Exposure time: 672 h  
Number of exposures: 7 d  
Method: Subacute toxicity

Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: Ingestion  
Exposure time: 2,160 h



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Number of exposures: 7 d  
Method: Subchronic toxicity

**Components:**

Phenol, 4-nonyl-, branched:

Repeated dose toxicity - Assessment : Causes severe skin burns and eye damage.

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information****Product:**

Remarks: No data available

**Other health hazards**

No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

Bisphenol A epoxy resin:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l  
Exposure time: 96 h  
Test Type: static test



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Test substance: Fresh water  
Method: OECD Test Guideline 203

epoxy phenol novolac resin:  
Toxicity to fish

: LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

tris(methylphenyl) phosphate:  
Toxicity to fish

: LC50 (Oncorhynchus mykiss (rainbow trout)): 0.6 mg/l  
Exposure time: 96 h

Phenol, 4-nonyl-, branched:  
Toxicity to fish

: LC50 (Pimephales promelas (fathead minnow)): 0.128 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.209 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.221 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: ASTM Method, other

**Components:**

Bisphenol A epoxy resin:

Toxicity to daphnia and other  
aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

epoxy phenol novolac resin:  
Toxicity to daphnia and other  
aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 1.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

tris(methylphenyl) phosphate:  
Toxicity to daphnia and other  
aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 0.146 mg/l  
Exposure time: 48 h



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Phenol, 4-nonyl-, branched:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.085 mg/l  
 Exposure time: 48 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: ASTM Method, other

EC50 (Daphnia magna (Water flea)): 0.14 mg/l  
 Exposure time: 48 h  
 Test substance: Fresh water  
 Method: Directive 67/548/EEC, Annex V, C.2.

**Components:**

Bisphenol A epoxy resin:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: EPA-660/3-75-009

epoxy phenol novolac resin:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water

tris(methylphenyl) phosphate:

Toxicity to algae : ErC50: 0.4042 mg/l  
 Exposure time: 72 h

Phenol, 4-nonyl-, branched:

Toxicity to algae : EbC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 1.3 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water

ErC50 (Selenastrum capricornutum (green algae)): 0.41 mg/l  
 Exposure time: 96 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: Algal Toxicity, Tiers I and II

**Components:**

Phenol, 4-nonyl-, branched:

M-Factor (Acute aquatic toxicity) : 10

**Components:**

epoxy phenol novolac resin:

Toxicity to fish (Chronic toxicity) : GLP: yes

tris(methylphenyl) phosphate:

Toxicity to fish (Chronic toxicity) : NOEC (Other): 0.01 mg/l



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toxicity) Exposure time: 28 d

Phenol, 4-nonyl-, branched:  
Toxicity to fish (Chronic  
toxicity)

: NOEC (Oncorhynchus mykiss (rainbow trout)): 0.006 mg/l  
Exposure time: 91 d  
Test Type: flow-through test  
Test substance: Fresh water

**Components:**

Bisphenol A epoxy resin:  
Toxicity to daphnia and other  
aquatic invertebrates  
(Chronic toxicity)

: NOEC (Daphnia magna (Water flea)): 0.3 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211

epoxy phenol novolac resin:  
Toxicity to daphnia and other  
aquatic invertebrates  
(Chronic toxicity)

: NOEC (Daphnia magna (Water flea)): 0.3 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211

tris(methylphenyl) phosphate:  
Toxicity to daphnia and other  
aquatic invertebrates  
(Chronic toxicity)

: NOEC (Daphnia magna (Water flea)): 0.1 mg/l  
Exposure time: 21 d

M-Factor (Chronic aquatic  
toxicity)

: No data available

**Components:**

Bisphenol A epoxy resin:  
Toxicity to microorganisms

: IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water

epoxy phenol novolac resin:  
Toxicity to microorganisms

: IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water

tris(methylphenyl) phosphate:  
Toxicity to microorganisms

: EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h

Phenol, 4-nonyl-, branched:  
Toxicity to microorganisms

: EC50 (activated sludge): 950 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 209



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**Components:**

Phenol, 4-nonyl-, branched:

Toxicity to soil dwelling organisms : EC10: 3.44 mg/kg  
Exposure time: 504 h

EC50 (Other): 906.7 mg/kg

Exposure time: 4 Weeks

Test substance: Synthetic

Plant toxicity : No data available

Sediment toxicity : No data available

**Components:**

Phenol, 4-nonyl-, branched:

Toxicity to terrestrial organisms : EC10: 63.2 mg/kg  
Exposure time: 672 h  
Test substance: Synthetic

Ecotoxicology Assessment

Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

Bisphenol A epoxy resin:

Biodegradability : Inoculum: Sewage (STP effluent)  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

epoxy phenol novolac resin:

Biodegradability : Inoculum: Sewage (STP effluent)  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

tris(methylphenyl) phosphate:

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 24.2 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

Phenol, 4-nonyl-, branched:



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Biodegradability : Inoculum: activated sludge  
 Concentration: 13 mg/l  
 Result: Inherently biodegradable.  
 Biodegradation: ca. 48.2 %  
 Exposure time: 35 d  
 Method: OECD Test Guideline 301B

Inoculum: Sediment  
 Concentration: 2  
 Result: Inherently biodegradable.  
 Biodegradation: 100 %  
 Exposure time: 63 - 84 d  
 Method: Anaerobic Biodegradability in the Subsurface

Inoculum: Marine water  
 Concentration: 11  
 Biodegradation: 50 %  
 Exposure time: 56 - 112 d  
 Method: OECD Test Guideline 309

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

**Components:**

Bisphenol A epoxy resin:  
 Stability in water

: Degradation half life(DT50): 4.83 d (25 °C) pH: 4  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Degradation half life(DT50): 7.1 d (25 °C) pH: 9  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Degradation half life(DT50): 3.58 d (25 °C) pH: 7  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

epoxy phenol novolac resin:  
 Stability in water

: Degradation half life(DT50): 4.83 d (25 °C) pH: 4





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Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (25 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (25 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential****Components:**

Bisphenol A epoxy resin:

Bioaccumulation : Bioconcentration factor (BCF): 31  
Remarks: Does not bioaccumulate.

epoxy phenol novolac resin:

Bioaccumulation : Bioconcentration factor (BCF): 31  
Remarks: Does not bioaccumulate.

Phenol, 4-nonyl-, branched:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 231  
Remarks: Does not bioaccumulate.

Species: Pimephales promelas (fathead minnow)  
Bioconcentration factor (BCF): 740  
Remarks: Bioaccumulation is unlikely.

**Components:**

Bisphenol A epoxy resin:

Partition coefficient: n-octanol/water : log Pow: 3.242 (25 °C)  
pH: 7.1  
Method: OECD Test Guideline 117

epoxy phenol novolac resin:

Partition coefficient: n-octanol/water : log Pow: 3.242 (25 °C)  
pH: 7.1  
Method: OECD Test Guideline 117

tris(methylphenyl) phosphate:

Partition coefficient: n-octanol/water : log Pow: 5.93

Phenol, 4-nonyl-, branched:

Partition coefficient: n-octanol/water : log Pow: 5.4 (23 °C)  
pH: 5.7  
Method: OECD Test Guideline 117



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**Mobility in soil**

Mobility : No data available

**Components:**

Bisphenol A epoxy resin:  
Distribution among environmental compartments : Koc: 445  
epoxy phenol novolac resin:  
Distribution among environmental compartments : Koc: 445  
tris(methylphenyl) phosphate:  
Distribution among environmental compartments : Koc: 4.31 Method: OECD Test Guideline 121  
Phenol, 4-nonyl-, branched:  
Distribution among environmental compartments : Koc: 23000 - 489000  
Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

**Hazardous to the ozone layer**

Ozone-Depletion Potential Not applicable

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

Global warming potential (GWP) : No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.



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Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****TDG**

|                      |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| UN number            | : UN 3082                                                                                                      |
| Proper shipping name | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN) |
| Class                | : 9                                                                                                            |
| Packing group        | : III                                                                                                          |
| Labels               | : 9                                                                                                            |

**IATA**

|                                          |                                                                                                                |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| UN/ID No.                                | : UN 3082                                                                                                      |
| Proper shipping name                     | : Environmentally hazardous substance, liquid, n.o.s.<br>(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN) |
| Class                                    | : 9                                                                                                            |
| Packing group                            | : III                                                                                                          |
| Labels                                   | : Miscellaneous                                                                                                |
| Packing instruction (cargo aircraft)     | : 964                                                                                                          |
| Packing instruction (passenger aircraft) | : 964                                                                                                          |

**IMDG**

|                      |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| UN number            | : UN 3082                                                                                                      |
| Proper shipping name | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN) |
| Class                | : 9                                                                                                            |
| Packing group        | : III                                                                                                          |
| Labels               | : 9                                                                                                            |
| EmS Code             | : F-A, S-F                                                                                                     |
| Marine pollutant     | : yes                                                                                                          |

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

Not applicable for product as supplied.

**National Regulations****TDG**

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|                      |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| UN number            | : UN 3082                                                                                                      |
| Proper shipping name | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN) |
| Class                | : 9                                                                                                            |
| Packing group        | : III                                                                                                          |
| Labels               | : 9                                                                                                            |
| ERG Code             | : 171                                                                                                          |
| Marine pollutant     | : yes(BISPHENOL A EPOXY RESIN, EPOXY PHENOL NOVOLAC RESIN)                                                     |

**SECTION 15. REGULATORY INFORMATION****The components of this product are reported in the following inventories:**

|        |                                                                                                                            |
|--------|----------------------------------------------------------------------------------------------------------------------------|
| CH INV | : The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory |
| DSL    | : All components of this product are on the Canadian DSL                                                                   |
| AICS   | : On the inventory, or in compliance with the inventory                                                                    |
| NZIoC  | : Not in compliance with the inventory                                                                                     |
| ENCS   | : On the inventory, or in compliance with the inventory                                                                    |
| KECI   | : Not in compliance with the inventory                                                                                     |
| PICCS  | : Low volume exemption                                                                                                     |
| IECSC  | : On the inventory, or in compliance with the inventory                                                                    |
| TCSI   | : Not in compliance with the inventory                                                                                     |
| TSCA   | : On the inventory, or in compliance with the inventory                                                                    |

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**Canada. CEPA 1999 Significant New Activity (SNAc) List**

No substances are subject to a Significant New Activity Notification.

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**SECTION 16. OTHER INFORMATION****Further information****NFPA:****HMIS® IV:**

|                        |   |          |
|------------------------|---|----------|
| <b>HEALTH</b>          | * | <b>2</b> |
| <b>FLAMMABILITY</b>    |   | <b>1</b> |
| <b>PHYSICAL HAZARD</b> |   | <b>1</b> |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.





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**SECTION 1. IDENTIFICATION**

Product name : HARDENER 9816 US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : 2795 Slough Avenue  
Mississauga, ON L4T 1G2,  
Canada  
Telephone : +1 905 678 9150

E-mail address of person responsible for the SDS : MSDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

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

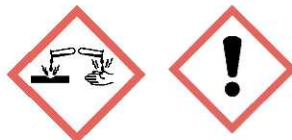
Recommended use : Hardener

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the Hazardous Products Regulations**

Acute toxicity (Oral) : Category 4  
Acute toxicity (Dermal) : Category 4  
Skin corrosion : Category 1C  
Serious eye damage : Category 1  
Skin sensitisation : Category 1

**GHS label elements**

Hazard pictograms :



Signal word : Danger

Hazard statements : H302 + H312 Harmful if swallowed or in contact with skin  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.

Precautionary statements : **Prevention:**  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P272 Contaminated work clothing should not be allowed out of the workplace.



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P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305 + P351 + P338 + P310 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/doctor.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**

P405 Store locked up.

**Disposal:**

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Substance

**Hazardous components**

| Chemical name | CAS-No.  | Concentration (% w/w) |
|---------------|----------|-----------------------|
| trientine     | 112-24-3 | 5 - 7                 |

**SECTION 4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
Consult a physician.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.



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- If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : No data is available on the product itself.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.  
No data is available on the product itself.
- Hazardous combustion products : No data is available on the product itself.  
No hazardous combustion products are known
- Specific extinguishing methods : No data is available on the product itself.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**



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- |                                                                           |                                                                                                                                                                                              |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions,<br>protective equipment and<br>emergency procedures | : Use personal protective equipment.                                                                                                                                                         |
| Environmental precautions                                                 | : Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform<br>respective authorities. |
| Methods and materials for<br>containment and cleaning up                  | : Soak up with inert absorbent material (e.g. sand, silica gel,<br>acid binder, universal binder, sawdust).<br>Keep in suitable, closed containers for disposal.                             |

**SECTION 7. HANDLING AND STORAGE**

- |                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advice on protection against<br>fire and explosion | : Normal measures for preventive fire protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Advice on safe handling                            | : Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the<br>application area.<br>To avoid spills during handling keep bottle on a metal tray.<br>Dispose of rinse water in accordance with local and national<br>regulations.<br>Persons susceptible to skin sensitisation problems or asthma,<br>allergies, chronic or recurrent respiratory disease should not<br>be employed in any process in which this mixture is being<br>used. |
| Conditions for safe storage                        | : Keep container tightly closed in a dry and well-ventilated place.<br>Observe label precautions.<br>Electrical installations / working materials must comply with the<br>technological safety standards.                                                                                                                                                                                                                                                                                                                                                                                                           |
| Materials to avoid                                 | : Strong acids<br><br>Strong bases<br><br>Strong oxidizing agents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

Hand protection

Material : butyl-rubber

Break through time : > 8 h



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|                          |                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Material                 | : Solvent-resistant gloves (butyl-rubber)                                                                                                     |
| Material                 | : Nitrile rubber                                                                                                                              |
| Break through time       | : 10 - 480 min                                                                                                                                |
| Material                 | : Neoprene gloves                                                                                                                             |
| Remarks                  | : The suitability for a specific workplace should be discussed with the producers of the protective gloves.                                   |
| Eye protection           | : Eye wash bottle with pure water<br>Tightly fitting safety goggles<br>Wear face-shield and protective suit for abnormal processing problems. |
| Skin and body protection | : Impervious clothing<br>Choose body protection according to the amount and concentration of the dangerous substance at the work place.       |
| Hygiene measures         | : When using do not eat or drink.<br>When using do not smoke.<br>Wash hands before breaks and at the end of workday.                          |

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

|                           |                                               |
|---------------------------|-----------------------------------------------|
| Appearance                | : liquid                                      |
| Colour                    | : amber                                       |
| Odour                     | : amine-like                                  |
| Odour Threshold           | : No data is available on the product itself. |
| pH                        | : No data is available on the product itself. |
| Freezing point            | : No data is available on the product itself. |
| Melting point             | No data is available on the product itself.   |
| Boiling point             | No data is available on the product itself.   |
| Flash point               | : > 100 °C<br>Method: estimated, closed cup   |
| Evaporation rate          | : No data is available on the product itself. |
| Flammability (solid, gas) | : No data is available on the product itself. |
| Flammability (liquids)    | : No data is available on the product itself. |
| Upper explosion limit     | : No data is available on the product itself. |
| Lower explosion limit     | : No data is available on the product itself. |
| Vapour pressure           | : No data is available on the product itself. |



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Relative vapour density : No data is available on the product itself.

Relative density : 1.02

Density : 1.02 g/cm<sup>3</sup> (25 °C)

Solubility(ies)  
Water solubility : practically insoluble (20 °C)

Solubility in other solvents : No data is available on the product itself.

Partition coefficient: n-octanol/water : No data is available on the product itself.

Auto-ignition temperature : No data is available on the product itself.

Decomposition temperature : > 200 °C

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity  
Viscosity, dynamic : 250 mPa.s (25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Particle size : No data is available on the product itself.

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : No decomposition if stored and applied as directed.  
Chemical stability : No decomposition if stored and applied as directed.  
Possibility of hazardous reactions : No decomposition if stored and applied as directed.

Conditions to avoid : No data available

Incompatible materials : No data available

Hazardous decomposition products : Carbon oxides  
Burning produces noxious and toxic fumes.  
Nitrogen oxides (NO<sub>x</sub>)

**SECTION 11. TOXICOLOGICAL INFORMATION**

Information on likely routes of exposure : No data is available on the product itself.

**Acute toxicity**

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Acute oral toxicity - Product : Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : No data available

Acute dermal toxicity - Product : Assessment: The component/mixture is moderately toxic after single contact with skin.

Acute toxicity (other routes of administration) : No data available

**Skin corrosion/irritation****Product:**

Species: Rabbit

Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.

Remarks: Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation****Product:**

Species: Rabbit

Result: Risk of serious damage to eyes.

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation****Product:**

Result: May cause sensitisation by skin contact.

Remarks: Causes sensitisation.

Assessment: No data available

**Germ cell mutagenicity****Components:**

trientine:

Genotoxicity in vitro : Concentration: 0 - 200 µg/L  
Metabolic activation: negative  
Method: OECD Test Guideline 482  
Result: negative

**Components:**

trientine:

Genotoxicity in vivo : Application Route: Intraperitoneal injection  
Dose: 0 - 600 mg/kg  
Method: OECD Test Guideline 474  
Result: negative



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**Carcinogenicity****Components:**

trientine:

Species: Mouse, (male)

Application Route: Dermal

Dose: 42 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 451

Result: negative

Species: Mouse, (male)

Application Route: Dermal

Exposure time: 104 weeks

Dose: 16.8 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 451

Carcinogenicity -  
Assessment : No data available

**ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Reproductive toxicity**

Effects on fertility : No data available

**Components:**

trientine:

Effects on foetal  
development

: Species: Rat

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:  
> 750 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Species: Rabbit

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level:  
125 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Reproductive toxicity -  
Assessment : No data available

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available



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**Repeated dose toxicity****Components:**

trientine:

Species: Rat, male and female

NOAEL: 50 mg/kg/d

Application Route: Ingestion

Exposure time: 26 Weeks

Number of exposures: 7 d

Method: Subchronic toxicity

Repeated dose toxicity - : No data available  
Assessment

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information****Product:**

Remarks: No data available

**Other health hazards**

No data available





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**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

trientine:

Toxicity to fish

: LC50 (Pimephales promelas (fathead minnow)): 330 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: Fish Acute Toxicity Test

**Components:**

trientine:

Toxicity to daphnia and other  
aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 31.1 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

**Components:**

trientine:

Toxicity to algae

: ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l  
Exposure time: 72 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic  
toxicity)

: No data available

Toxicity to fish (Chronic  
toxicity)

: No data available

**Components:**

trientine:

Toxicity to daphnia and other  
aquatic invertebrates  
(Chronic toxicity)

: EC10 (Daphnia magna (Water flea)): 1.9 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

M-Factor (Chronic aquatic  
toxicity)

: No data available

**Components:**

trientine:

Toxicity to microorganisms

: EC50 (activated sludge): 800 mg/l  
Exposure time: 0.5 h  
Test Type: static test  
Test substance: Fresh water





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Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment  
Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

trientine:

Biodegradability : Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 162 d  
Method: OECD Test Guideline 301D

Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 20 %  
Exposure time: 84 d  
Method: Inherent Biodegradability: Modified SCAS Test

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Stability in water : No data available



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Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential**

Bioaccumulation : No data available

**Components:**

trientine:

Partition coefficient: n-octanol/water : log Pow: -2.65 (20 °C)  
Method: OECD Test Guideline 117

**Mobility in soil**

Mobility : No data available

**Components:**

trientine:

Distribution among environmental compartments : Koc: 1584.9 - 5012 Method: OECD Test Guideline 106

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

**Hazardous to the ozone layer**

Ozone-Depletion Potential : Not applicable

Additional ecological information - Product : No data available

Global warming potential (GWP) : No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with



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chemical or used container.  
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****TDG**

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(N-[2-(imidazolidin-1-yl)ethyl]ethylenediamine)  
Class : 8  
Packing group : III  
Labels : 8

**IATA**

UN/ID No. : UN 2735  
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.  
(N-[2-(imidazolidin-1-yl)ethyl]ethylenediamine)  
Class : 8  
Packing group : III  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 856  
Packing instruction (passenger aircraft) : 852

**IMDG**

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(N-[2-(imidazolidin-1-yl)ethyl]ethylenediamine)  
Class : 8  
Packing group : III  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

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

Not applicable for product as supplied.

**National Regulations****TDG**

UN number : UN 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.



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(N-[2-(imidazolidin-1-yl)ethyl]ethylenediamine)

|                  |       |
|------------------|-------|
| Class            | : 8   |
| Packing group    | : III |
| Labels           | : 8   |
| ERG Code         | : 153 |
| Marine pollutant | : no  |

**SECTION 15. REGULATORY INFORMATION****The components of this product are reported in the following inventories:**

|        |                                                                                |
|--------|--------------------------------------------------------------------------------|
| CH INV | : On the inventory, or in compliance with the inventory                        |
| DSL    | : This product contains one or several components listed in the Canadian NDSL. |
| AICS   | : On the inventory, or in compliance with the inventory                        |
| NZIoC  | : On the inventory, or in compliance with the inventory                        |
| ENCS   | : Low volume exemption, On the inventory, or in compliance with the inventory  |
| KECI   | : Not in compliance with the inventory                                         |
| PICCS  | : Not in compliance with the inventory                                         |
| IECSC  | : Low volume exemption, On the inventory, or in compliance with the inventory  |
| TCSI   | : Not in compliance with the inventory                                         |
| TSCA   | : On the inventory, or in compliance with the inventory                        |

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**Canada. CEPA 1999 Significant New Activity (SNAc) List**

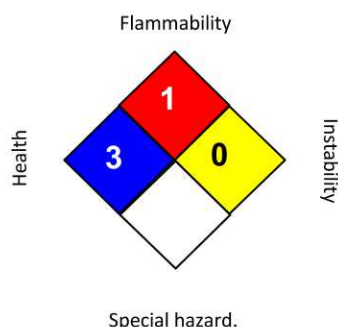
No substances are subject to a Significant New Activity Notification.





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**SECTION 16. OTHER INFORMATION****Further information****NFPA:****HMIS® IV:**

|                 |  |   |
|-----------------|--|---|
| HEALTH          |  | 3 |
| FLAMMABILITY    |  | 1 |
| PHYSICAL HAZARD |  | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

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