

**EPOCAST® 169 A-1 US**

Version 1.0      Revision Date: 06/24/2017      SDS Number: 400001013670      Date of last issue: -  
Date of first issue: 06/24/2017

**SECTION 1. IDENTIFICATION**

Product name : EPOCAST® 169 A-1 US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : P.O. Box 4980  
The Woodlands,  
TX 77387  
United States of America (USA)  
Telephone : Non-Emergency: (800) 257-5547  
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 29 CFR 1910.1200**

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

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
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

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the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves/ 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.

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:**

Not available

**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 : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
Bisphenol A epoxy resin	25068-38-6	50 - 70
Formaldehyde, oligomeric reaction products with phenol	9003-35-4	10 - 20
1-isopropyl-2,2-dimethyltrimethylene diisobutyrate	6846-50-0	10 - 20
Silicon, amorphous	112945-52-5	1 - 5

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

**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.  
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.

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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 : 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.

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**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.

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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).  
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.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.  
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.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : Strong acids  
  
Strong bases  
  
Strong oxidizing agents

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Silicon, amorphous	112945-52-5	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m <sup>3</sup> / %SiO <sub>2</sub> (Silica)	OSHA Z-3

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		TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3

**Personal protective equipment**

Hand protection

Material : butyl-rubber

Break through time : &gt; 8 h

Material : Solvent-resistant gloves (butyl-rubber)

Material : Nitrile rubber

Break through time : 10 - 480 min

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  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.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 : paste

Colour : red brown

Odour : slight

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 : &gt; 200 °C

Flash point : > 143 °C  
Method: closed cup

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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.
Relative vapour density	:	No data is available on the product itself.
Relative density	:	0.55 - 0.65
Density	:	No data is available on the product itself.
Solubility(ies)		
Water solubility	:	No data is available on the product itself.
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.
Thermal decomposition	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity	:	No data is available on the product itself.
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
Hazardous decomposition products	:	Carbon oxides Nitrogen oxides (NO <sub>x</sub> ) Burning produces noxious and toxic fumes.

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**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

Formaldehyde, oligomeric reaction products with phenol:

Acute oral toxicityComponents : LD50 (Rat): > 5,000 mg/kg

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Acute oral toxicityComponents : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 425  
Assessment: The substance or mixture has no acute oral toxicity

Silicon, amorphous:

Acute oral toxicityComponents : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 401

**Components:**

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Acute inhalation toxicity : LC50 (Rat): > 5.3 mg/l  
Exposure time: 6 h  
Test atmosphere: vapour

Silicon, amorphous:

Acute inhalation toxicity : LC50 (Rat, male and female): > 58.8 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

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

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

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

Remarks: May cause skin irritation and/or dermatitis.

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

Remarks: May cause irreversible eye damage.

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

Remarks: Causes sensitisation.

Assessment: No data available

**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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

Concentration: 100 - 5000 ug/plate

Metabolic activation: with and without metabolic activation  
Method: Directive 67/548/EEC, Annex, B.13/14  
Result: negative

Test Type: In vitro mammalian cell gene mutation test

Species: Chinese hamster ovary cells

Method: OECD Test Guideline 476

Result: negative

Silicon, amorphous:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Metabolic activation: with and without metabolic activation



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Method: OECD Test Guideline 471  
Result: negative

**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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:  
Genotoxicity in vivo

: Cell type: Ovary  
Method: OECD Test Guideline 476  
Result: negative

Silicon, amorphous:  
Genotoxicity in vivo

: Application Route: Inhalation  
Dose: 50 mg/m<sup>3</sup>  
Result: negative

**Components:**

Bisphenol A epoxy resin:  
Germ cell mutagenicity-  
Assessment

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

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  
Method: OECD Test Guideline 453  
Result: negative

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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

Silicon, amorphous:  
 Species: Rat, (male and female)  
 Application Route: Oral  
 Exposure time: 103 weeks  
 Dose: 1800 - 3200 mg/kg  
 Frequency of Treatment: 7 daily  
 Method: OECD Test Guideline 453  
 Result: negative

Carcinogenicity - Assessment : No data available

**IARC** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**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.

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

**NTP** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**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 body weight  
 Symptoms: No adverse effects  
 Method: OECD Test Guideline 416  
 Result: No effects on fertility and early embryonic development were detected.

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:  
 Species: Rat, male and female

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Application Route: Oral  
Method: OECD Test Guideline 421

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 422  
Result: Animal testing did not show any effects on fertility.

**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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Species: Rat, females  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
343 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level:  
343 mg/kg body weight  
Method: OECD Test Guideline 414

Silicon, amorphous:

Species: Mouse  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
1,340 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Species: Rabbit  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
1,600 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

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Species: Rat  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
1,350 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

**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  
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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Species: Rat, male and female  
NOAEL: 150 - 750 mg/kg/d  
Application Route: Ingestion  
Exposure time: 13 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
NOEL: 30 mg/kg  
Application Route: Ingestion  
Number of exposures: 7 d

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Method: Subchronic toxicity

Silicon, amorphous:  
Species: Rat, male and female  
NOAEL: 7950 - 8980 mg/kg  
Application Route: Ingestion  
Exposure time: 4,320 h  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
: 4000 - 4500 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: dust/mist  
Exposure time: 13 Weeks  
Number of exposures: 7 d  
Method: OECD Test Guideline 413

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

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**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  
Test substance: Fresh water  
Method: OECD Test Guideline 203

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Toxicity to fish : EC50 (Lepomis macrochirus (Bluegill sunfish)):  $\geq$  6 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Test substance: Fresh water  
Method: OECD Test Guideline 203  
Remarks: No-observed-effect level

Silicon, amorphous:

Toxicity to fish : LL50 (Brachydanio rerio (zebrafish)):  $>$  10,000 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)):  $>$  1.46 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Remarks: Aquatic toxicity is unlikely due to low solubility.

Silicon, amorphous:

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)):  $\geq$  1,000 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**Components:**

Bisphenol A epoxy resin:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
Exposure time: 72 h

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Test Type: static test  
Test substance: Fresh water  
Method: EPA-660/3-75-009

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): > 7.49 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
Remarks: Aquatic toxicity is unlikely due to low solubility.

Silicon, amorphous:

Toxicity to algae : EL50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 10,000 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : No data available

**Components:**

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Toxicity to fish (Chronic toxicity) : GLP: yes

**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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.7 mg/l  
Exposure time: 21 d  
Test Type: flow-through test  
Test substance: Fresh water  
Method: OECD Test Guideline 211  
Remarks: Aquatic toxicity is unlikely due to low solubility.

EC50 (Daphnia magna (Water flea)): >= 1.3 mg/l  
Exposure time: 21 d  
Test Type: flow-through test  
Test substance: Fresh water

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

Bisphenol A epoxy resin:

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

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:**

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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Biodegradability : Inoculum: activated sludge  
 Concentration: 10 mg/l  
 Result: Readily biodegradable.  
 Biodegradation: 70.73 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 310

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



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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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Stability in water : Degradation half life(DT50): 1.48 - 14.75 yr (20 °C) pH: 7.5  
Method: No information available.

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.

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 1.95  
Exposure time: 23 d  
Test substance: Fresh water  
Method: flow-through test  
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

1-isopropyl-2,2-dimethyltrimethylene diisobutyrate:

Partition coefficient: n-octanol/water : log Pow: 4.04 - 4.91 (25 °C)  
pH: 7

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**Mobility in soil**

Mobility : No data available

**Components:**

Bisphenol A epoxy resin:  
Distribution among : Koc: 445  
environmental compartments  
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 : Regulation: 40 CFR Protection of Environment; Part 82  
Protection of Stratospheric Ozone - CAA Section 602 Class I  
Substances  
Remarks: This product neither contains, nor was  
manufactured with a Class I or Class II ODS as defined by the  
U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A +  
B).

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.

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

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

UN/ID No.	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY 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. (BISPHENOL A EPOXY 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****DOT Classification**

UN/ID/NA number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN)
Class	: 9
Packing group	: III
Labels	: CLASS 9
ERG Code	: 171
Marine pollutant	: yes(BISPHENOL A EPOXY RESIN)

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know Act**

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**SARA 311/312 Hazards** : No SARA Hazards

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING! This product contains a chemical known to the State of California to cause cancer.  
formaldehyde 50-00-0

**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	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or 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)

**TSCA - 5(a) Significant New Use Rule List of Chemicals**

No substances are subject to a Significant New Use Rule.

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

No substances are subject to TSCA 12(b) export notification requirements.

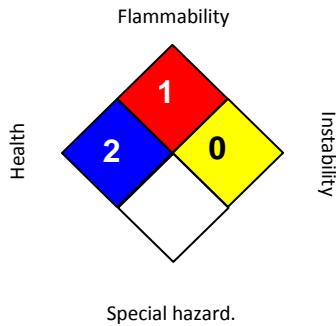
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**SECTION 16. OTHER INFORMATION**

**Further information**

**NFPA:**



**HMIS® IV:**

<b>HEALTH</b>		<b>2</b>
<b>FLAMMABILITY</b>		<b>1</b>
<b>PHYSICAL HAZARD</b>		<b>0</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 9646 US

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : P.O. Box 4980  
The Woodlands,  
TX 77387  
United States of America (USA)  
Telephone : Non-Emergency: (800) 257-5547  
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 29 CFR 1910.1200**

Acute toxicity (Inhalation) : Category 4  
Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 1B  
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)  
Acute aquatic toxicity : Category 3  
Chronic aquatic toxicity : Category 3

**GHS label elements**

Hazard pictograms : 

Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.

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H332 Harmful if inhaled.  
 H335 May cause respiratory irritation.  
 H360F May damage fertility.  
 H412 Harmful to aquatic life with long lasting effects.

## Precautionary statements

: **Prevention:**

P201 Obtain special instructions before use.  
 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.  
 P271 Use only outdoors or in a well-ventilated area.  
 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:**

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/shower.  
 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.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P363 Wash contaminated clothing before reuse.

**Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
 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 : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
9-Octadecenoic acid (9Z)-, polymer with N-(2-aminoethyl)-N'-[2-[(2-aminoethyl)amino]ethyl]-	70321-87-8	50 - 70

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1,2-ethanediamine		
2,2'-iminodi(ethylamine)	111-40-0	10 - 20
4,4'-isopropylidenediphenol	80-05-7	10 - 20
Monoethanolamine	141-43-5	2.5 - 3

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

**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 : Consult a physician after significant exposure.  
 If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
 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.
- Notes to physician : No information available.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local



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- circumstances and the surrounding environment.
- No data is available on the product itself.
- Unsuitable extinguishing media : High volume water jet
- 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**

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment. Ensure adequate ventilation.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. 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). 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 : Avoid formation of aerosol. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8.

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Smoking, eating and drinking should be prohibited in the application area.  
 Provide sufficient air exchange and/or exhaust in work rooms.  
 To avoid spills during handling keep bottle on a metal tray.  
 Dispose of rinse water in accordance with local and national regulations.  
 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.  
 Do not breathe vapours or spray mist.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
 Observe label precautions.  
 Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : Strong acids  
 Strong bases  
 Strong oxidizing agents

Further information on storage stability : No decomposition if stored and applied as directed.

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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2,2'-iminodi(ethylamine)	111-40-0	TWA	1 ppm	ACGIH
Monoethanolamine	141-43-5	TWA	3 ppm	ACGIH
		STEL	6 ppm	ACGIH
		TWA	3 ppm 6 mg/m <sup>3</sup>	OSHA Z-1

**Personal protective equipment**

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Respiratory protection : No personal respiratory protective equipment normally required.

**Hand protection**

Material : butyl-rubber  
 Material : Ethyl Vinyl Alcohol Laminate (EVAL)  
 Break through time : > 8 h

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

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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  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

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 : amber

Odour : ammoniacal

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

Initial boiling point and boiling range : No data available

Flash point : 171 °C  
Method: Cleveland open 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 / Upper flammability limit : No data is available on the product itself.

Lower explosion limit / Lower flammability limit : No data is available on the product itself.

Vapour pressure : > 1.333 hPa (20 °C)

Relative vapour density : 1

Relative density : 0.98

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Density : No data is available on the product itself.

Solubility(ies)  
Water solubility : slightly soluble

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.

Thermal decomposition : No data is available on the product itself.

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

Viscosity  
Viscosity, dynamic : 400 mPa.s

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 : 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 (NOx)

**SECTION 11. TOXICOLOGICAL INFORMATION**

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

**Acute toxicity**

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

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Acute inhalation toxicity - Product : Acute toxicity estimate: 1.08 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
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: Extremely corrosive and destructive to tissue.

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

Remarks: May cause irreversible eye damage.

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

Remarks: Causes sensitisation.

Assessment: No data available

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

4,4'-isopropylidenediphenol:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Result: negative

Monoethanolamine:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

Metabolic activation: negative  
Result: negative

**Components:**

2,2'-iminodi(ethylamine):

Genotoxicity in vivo : Cell type: Somatic

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Application Route: Oral  
Dose: 85 - 850 mg/kg  
Method: OECD Test Guideline 474  
Result: negative

Application Route: Oral  
Result: negative

4,4'-isopropylidenediphenol:  
Genotoxicity in vivo : Method: OECD Test Guideline 474  
Result: negative

Monoethanolamine:  
Genotoxicity in vivo : Application Route: Oral  
Exposure time: 24 h  
Dose: 375 - 1500 mg/kg  
Method: OECD Test Guideline 474  
Result: negative

**Carcinogenicity****Components:**

2,2'-iminodi(ethylamine):  
Species: Mouse, (male)  
Application Route: Dermal  
Dose: 56.3 mg/kg  
Frequency of Treatment: 3 daily  
Result: negative

4,4'-isopropylidenediphenol:  
Species: Rat, (male and female)  
Application Route: Oral  
Exposure time: 103 weeks  
Frequency of Treatment: 7 daily  
Result: negative

Carcinogenicity - Assessment : No data available

**IARC** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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

2,2'-iminodi(ethylamine):  
Effects on fertility

: Species: Rat, male and female  
Application Route: Oral  
General Toxicity - Parent: No observed adverse effect level:  
30 mg/kg wet weight  
Method: OECD Test Guideline 421  
Result: positive

4,4'-isopropylidenediphenol:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 416  
Result: Embryotoxic effects and adverse effects on the  
offspring were detected.

Monoethanolamine:

Species: Rat, male and female  
Application Route: Oral  
Target Organs: Reproductive organs  
Method: OECD Test Guideline 416  
Result: No effects on fertility and early embryonic  
development were detected.

**Components:**

2,2'-iminodi(ethylamine):  
Effects on foetal  
development

: Species: Rat  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
100 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No adverse effects

4,4'-isopropylidenediphenol:

Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
< 160 mg/kg body weight  
Method: OECD Test Guideline 416  
Result: No teratogenic effects

Monoethanolamine:

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

Species: Rat  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
75 mg/kg body weight  
Method: OECD Test Guideline 414

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Result: No teratogenic effects

**Components:**

4,4'-isopropylidenediphenol:

Reproductive toxicity -  
Assessment

: Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

**STOT - single exposure****Components:**

2,2'-iminodi(ethylamine):

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

4,4'-isopropylidenediphenol:

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Monoethanolamine:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

**STOT - repeated exposure**

No data available

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

2,2'-iminodi(ethylamine):

Species: Rat, male and female

NOEC: 70 - 80 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 360 h

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOAEL: 114 mg/kg/d

Application Route: Skin contact

Exposure time: 9,600 h

Number of exposures: 6 d

Method: Chronic toxicity

4,4'-isopropylidenediphenol:

Species: Dog, male and female

NOEC: 75 mg/kg, 10 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: dust/mist



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Exposure time: 2,160 h  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Rat, male and female  
LOAEL: 600 mg/kg  
Application Route: Ingestion  
Exposure time: 672 h  
Number of exposures: 7 d  
Method: Subchronic toxicity

Monoethanolamine:  
Species: Rat, male and female  
NOEC: 300 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: vapour  
Exposure time: 672 h  
Number of exposures: 7 d  
Method: OECD Test Guideline 412

Repeated dose toxicity - Assessment : No data available

**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

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

2,2'-iminodi(ethylamine):

Toxicity to fish

: LC50: 430 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.1.

4,4'-isopropylidenediphenol:

Toxicity to fish

: LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 mg/l  
Exposure time: 96 h

Monoethanolamine:

Toxicity to fish

: LC50 (Cyprinus carpio (Carp)): 349 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water

**Components:**

2,2'-iminodi(ethylamine):

Toxicity to daphnia and other aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 32 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

4,4'-isopropylidenediphenol:

Toxicity to daphnia and other aquatic invertebrates

: EC50: 3.9 - 10.2 mg/l  
Exposure time: 48 h

(Ceriodaphnia dubia (Water flea)):

Monoethanolamine:

Toxicity to daphnia and other aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 65 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.2.

**Components:**

2,2'-iminodi(ethylamine):

Toxicity to algae

: EbC50 (Selenastrum capricornutum (green algae)): 1,164 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

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4,4'-isopropylidenediphenol:  
Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 2.5 - 3.1 mg/l  
Exposure time: 96 h

Monoethanolamine:  
Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 2.5 mg/l  
Exposure time: 72 h  
Test substance: Fresh water  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : No data available

**Components:**

2,2'-iminodi(ethylamine):  
Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l  
Exposure time: 28 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 210

4,4'-isopropylidenediphenol:  
Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.016 mg/l  
Exposure time: 444 d  
Test Type: flow-through test  
Test substance: Fresh water  
Method: Fish Life Cycle Toxicity  
Remarks: Toxic to aquatic organisms.

Monoethanolamine:  
Toxicity to fish (Chronic toxicity) : NOEC (Oryzias latipes (Orange-red killifish)): 1.2 mg/l  
Exposure time: 30 d  
Test substance: Fresh water  
Method: OECD Test Guideline 210

**Components:**

2,2'-iminodi(ethylamine):  
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.6 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.20

Monoethanolamine:  
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.85 mg/l  
Exposure time: 21 d  
Test substance: Fresh water  
Method: OECD Test Guideline 211

**Components:**

4,4'-isopropylidenediphenol:  
M-Factor (Chronic aquatic toxicity) : 1

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Toxicity to microorganisms : No data available

**Components:**

2,2'-iminodi(ethylamine):

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg  
Exposure time: 56 d  
Method: OECD Test Guideline 222

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

**Components:**

2,2'-iminodi(ethylamine):

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Monoethanolamine:

Acute aquatic toxicity : Harmful to aquatic life.

**Components:**

4,4'-isopropylidenediphenol:

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

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

2,2'-iminodi(ethylamine):

Biodegradability : Inoculum: activated sludge  
Result: Readily biodegradable.  
Biodegradation: 87 %  
Exposure time: 21 d  
Method: OECD Test Guideline 301D

4,4'-isopropylidenediphenol:

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 1 - 2 %  
Exposure time: 28 d

Monoethanolamine:

Biodegradability : Inoculum: activated sludge  
Concentration: 20 mg/l  
Result: Readily biodegradable.  
Biodegradation: > 90 %  
Exposure time: 21 d

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Method: OECD Test Guideline 301A

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

**Components:**

2,2'-iminodi(ethylamine):  
Photodegradation : Test Type: Air  
Rate constant: 500000  
Degradation (direct photolysis): 50 %

Monoethanolamine:  
Photodegradation : Test Type: Air  
Rate constant: 35.844  
Degradation (direct photolysis): 50 %

Impact on Sewage Treatment : No data available

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

2,2'-iminodi(ethylamine):  
Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 0.3 - 6.3  
Exposure time: 42 d  
Test substance: Fresh water  
Method: flow-through test  
Remarks: Bioaccumulation is unlikely.

**Components:**

2,2'-iminodi(ethylamine):  
Partition coefficient: n-octanol/water : log Pow: -1.58 (20 °C)  
pH: 7

Monoethanolamine:

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Partition coefficient: n-octanol/water : log Pow: -1.31 (25 °C)

**Mobility in soil**

Mobility : No data available

**Components:**

2,2'-iminodi(ethylamine):  
Distribution among environmental compartments : Koc: 19111

Monoethanolamine:  
Distribution among environmental compartments : Koc: 1.167

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 : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful 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.

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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****IATA**

UN/ID No.	: UN 2079
Proper shipping name	: Diethylenetriamine SOLUTION
Class	: 8
Packing group	: II
Labels	: Corrosive
Packing instruction (cargo aircraft)	: 855
Packing instruction (passenger aircraft)	: 851

**IMDG**

UN number	: UN 2079
Proper shipping name	: DIETHYLENETRIAMINE SOLUTION
Class	: 8
Packing group	: II
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****DOT Classification**

UN/ID/NA number	: UN 2079
Proper shipping name	: DIETHYLENETRIAMINE SOLUTION
Class	: 8
Packing group	: II
Labels	: CORROSIVE
ERG Code	: 154
Marine pollutant	: no

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know Act**

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**SARA 311/312 Hazards** : Acute toxicity (any route of exposure)  
 Skin corrosion or irritation  
 Serious eye damage or eye irritation  
 Respiratory or skin sensitisation  
 Reproductive toxicity  
 Specific target organ toxicity (single or repeated exposure)

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

4,4'-isopropylidenediphenol	80-05-7	13.7352 %
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This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING: This product can expose you to chemicals including 2,2'-iminodiethanol, which is/are known to the State of California to cause cancer, and 4,4'-isopropylidenediphenol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**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	: This product contains one or several components listed in the Canadian NDSL.
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: not determined
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or 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)

**TSCA - 5(a) Significant New Use Rule List of Chemicals**

No substances are subject to a Significant New Use Rule.

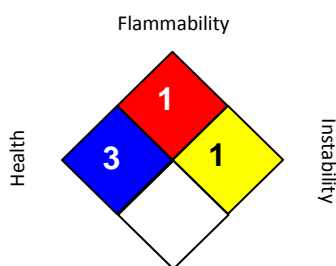
**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

No substances are subject to TSCA 12(b) export notification requirements.



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

<b>HEALTH</b>	*	<b>3</b>
<b>FLAMMABILITY</b>		<b>1</b>
<b>PHYSICAL HAZARD</b>		<b>0</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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ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
 OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1  
 Limits for Air Contaminants  
 ACGIH / TWA : 8-hour, time-weighted average  
 ACGIH / STEL : Short-term exposure limit  
 OSHA Z-1 / TWA : 8-hour time weighted average

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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