



## SAFETY DATA SHEET



Enriching lives through innovation

### EPIBOND® 156-1 A US

|                |                              |                             |   |
|----------------|------------------------------|-----------------------------|---|
| Version<br>1.2 | Revision Date:<br>10/19/2018 | SDS Number:<br>400001014592 | Date of last issue: 07/23/2015<br>Date of first issue: 07/18/2015 |
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#### SECTION 1. IDENTIFICATION

Product name : EPIBOND® 156-1 A 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 resin solution

#### 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  
 Short-term (acute) aquatic hazard : Category 2  
 Long-term (chronic) aquatic hazard : 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:**

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P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
 P264 Wash skin thoroughly after handling.  
 P272 Contaminated work clothing must not be allowed out of 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) |
|---|------------|-----------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane | 1675-54-3  | 70 - 90               |
| mica  | 12001-26-2 | 10 - 20               |
| titanium dioxide  | 13463-67-7 | 1 - 5                 |

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

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

**SECTION 4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
 Show this safety data sheet to the doctor in attendance.  
 Treat symptomatically.  
 Get medical attention if symptoms occur.

If inhaled : If inhaled, remove to fresh air.  
 Get medical attention if symptoms occur.



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- 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.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
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.
- Notes to physician : Treat symptomatically.

**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 allow run-off from fire fighting to enter drains or water courses.
- 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.  
Refer to protective measures listed in sections 7 and 8.
- 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.



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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.  
Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Further information on storage stability : Stable under normal conditions.

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

| Components       | CAS-No.    | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis    |
|------------------|------------|-------------------------------|--|----------|
| mica             | 12001-26-2 | TWA (Respirable fraction)     | 3 mg/m <sup>3</sup>                            | ACGIH    |
|                  |            | TWA (Dust)                    | 20 Million particles per cubic foot            | OSHA Z-3 |
| titanium dioxide | 13463-67-7 | TWA (total dust)              | 15 mg/m <sup>3</sup>                           | OSHA Z-1 |
|                  |            | TWA                           | 10 mg/m <sup>3</sup> (Titanium dioxide)        | ACGIH    |

**Personal protective equipment**

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|                          |   |   |
|--------------------------|---|---|
| Respiratory protection   | : | No personal respiratory protective equipment normally required.   |
| Hand protection          | : | The suitability for a specific workplace should be discussed with the producers of the protective gloves.                                   |
| Remarks                  | : |   |
| 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                                       | : | paste  |
| Colour   | : | off-white  |
| 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                                    | : | No data is available on the product itself.          |
| Flash point                                      | : | 360 °F / 182 °C<br>Method: Pensky-Martens 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 / 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 hPa (68 °F / 20 °C)                              |



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

Relative density : 1.5

Density : 1.5 g/cm<sup>3</sup> (77 °F / 25 °C)

Solubility(ies)

Water solubility : practically insoluble (68 °F / 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.

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 : 325,000 mPa.s (77 °F / 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 dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No hazards to be specially mentioned.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : No hazardous decomposition products are known.

**SECTION 11. TOXICOLOGICAL INFORMATION**

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

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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Acute oral : LD50 (Rat, female): > 2,000 mg/kg



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toxicityComponents                      Method: OECD Test Guideline 420  
Assessment: The substance or mixture has no acute oral toxicity

titanium dioxide:  
Acute oral toxicityComponents                      : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
Assessment: The substance or mixture has no acute oral toxicity

**Components:**

titanium dioxide:  
Acute inhalation toxicity                      : LC50 (Rat, male and female): 3.43 - 5.09 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Assessment: The substance or mixture has no acute inhalation toxicity

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: The product is not considered as being a skin irritant.

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

Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

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

Remarks: No data available

**Components:**

titanium dioxide:  
Assessment:                      No skin irritation, No eye irritation  
Does not cause skin sensitisation., Does not cause respiratory sensitisation.

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



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2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 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

titanium dioxide:  
 Genotoxicity in vitro : Test Type: Ames test  
 Concentration: 100 - 200 ug/plate  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 471  
 Result: negative

Test Type: In vitro mammalian cell gene mutation test  
 Concentration: 31 - 500 µg/L  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 476  
 Result: negative

Test Type: Chromosome aberration test in vitro  
 Concentration: 125 - 2500 µg/L  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 473  
 Result: negative

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 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

titanium dioxide:  
 Genotoxicity in vivo : Test Type: Micronucleus test  
 Species: Mouse (males)  
 Application Route: Inhalation  
 Exposure time: 5 consecutive days  
 Dose: 0.8, 7.2, and 28.5 mg/m<sup>3</sup>  
 Method: OECD Test Guideline 474  
 Result: negative

Test Type: Micronucleus test  
 Species: Rat (male and female)  
 Application Route: Oral  
 Exposure time: once





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Dose: 500, 1000, and 2000 mg/kg bw  
Method: OECD Test Guideline 474  
Result: negative

**Components:**

titanium dioxide:

Germ cell mutagenicity-  
Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-  
Assessment : No data available

**Carcinogenicity****Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

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

titanium dioxide:

Species: Rat, male and female

Application Route: Oral

Exposure time: 103 weeks

Dose: 0, 25000, 50000 ppm

Frequency of Treatment: 7 days/week

NOAEL: &gt; 50.000 ppm

Method: No information available.

Remarks: Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." but that: "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARCs overall evaluation was that



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"titanium dioxide is possibly carcinogenic to humans (Group 2B)."

Huntsman has examined all of the available animal carcinogenicity and mechanistic data together with workplace epidemiology data for titanium dioxide and concludes that the weight of scientific evidence indicates that there is no causative link between titanium dioxide exposure and cancer risk in humans and that workplace exposures in compliance with applicable exposure standards will not result in lung cancer or chronic respiratory diseases in humans.

**Components:**

titanium dioxide:

Carcinogenicity -  
Assessment

: Not classifiable as a human carcinogen.

**IARC**Group 2B: Possibly carcinogenic to humans  
titanium dioxide**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.

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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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.**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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



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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

titanium dioxide:

Species: Rat, male and female  
 Application Route: Oral  
 Dose: 100, 300, and 1000 mg/kg bw/  
 Duration of Single Treatment: 20 d  
 Frequency of Treatment: 7 days/week  
 General Toxicity Maternal: No observed adverse effect level:  
 1,000 mg/kg body weight  
 Developmental Toxicity: No observed adverse effect level:  
 1,000 mg/kg body weight  
 Method: OECD Test Guideline 414  
 Result: No adverse effects

**Components:**

titanium dioxide:  
 Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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



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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

titanium dioxide:

Species: Rat, male and female  
NOEC: 3500 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: dust/mist  
Exposure time: 2 yr  
Number of exposures: 5 d  
Method: Chronic toxicity

Species: Rat, male and female  
NOEC: 10 - 50 mg/m<sup>3</sup>  
Application Route: Inhalation  
Exposure time: 2 yr  
Number of exposures: 6 hours/day, 5 days/week  
Method: Chronic toxicity

**Components:**

titanium dioxide:  
Repeated dose toxicity - Assessment : No skin irritation, No eye irritation  
No adverse effect has been observed in chronic toxicity tests.

**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



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**Neurological effects**

No data available

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

Remarks: No data available

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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

titanium dioxide:

Toxicity to fish : LC50 (Cyprinodon variegatus (sheepshead minnow)): > 10,000 mg/l  
 Exposure time: 96 h  
 Test Type: semi-static test  
 Test substance: Marine water  
 Method: OECD Test Guideline 203

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

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

Toxicity to fish (Chronic toxicity) : No data available



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**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

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

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

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

**Components:**

titanium dioxide:

Plant toxicity : NOEC: 100,000 mg/kg  
 Exposure time: 480 h

**Components:**

titanium dioxide:

Sediment toxicity : (Gammarus pulex (Amphipod)): > 100000 mg/kg sediment dw  
 Study: Acute  
 Test Type: semi-static test  
 Water: Fresh water  
 Exposure duration: 28 d  
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 100000 mg/kg sediment dw  
 Study: Chronic  
 Test Type: semi-static test  
 Water: Fresh water  
 Exposure duration: 28 d  
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 14989 mg/kg sediment dw  
 Study: Acute  
 Test Type: semi-static test  
 Water: Marine water  
 Exposure duration: 10 d

**Components:**

titanium dioxide:

Toxicity to terrestrial organisms : NOEC: 10,000 mg/kg  
 Exposure time: 672 h



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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:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Biodegradability : Inoculum: Sewage (STP effluent)  
 Concentration: 20 mg/l  
 Result: Not readily biodegradable.  
 Biodegradation: 5 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301F

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:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Stability in water : Degradation half life(DT50): 4.83 d (77 °F / 25 °C) pH: 4  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water  
 Degradation half life(DT50): 7.1 d (77 °F / 25 °C) pH: 9  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water  
 Degradation half life(DT50): 3.58 d (77 °F / 25 °C) pH: 7  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Photodegradation : No data available





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Impact on Sewage Treatment : No data available

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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Bioaccumulation : Bioconcentration factor (BCF): 31  
Remarks: Does not bioaccumulate.

titanium dioxide:  
Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)  
Bioconcentration factor (BCF): 19 - 352  
Exposure time: 14 d  
Test substance: Fresh water  
Method: semi-static test  
Remarks: Does not bioaccumulate.

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)  
pH: 7.1  
Method: OECD Test Guideline 117

**Mobility in soil**

Mobility : No data available

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Distribution among environmental compartments : Koc: 445  
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



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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 : There is no data available for this 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.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of contents/ container to an approved waste disposal plant.

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 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,

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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)

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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

| Components                | CAS-No.  | Component RQ<br>(lbs) | Calculated product RQ<br>(lbs) |
|---------------------------|----------|-----------------------|--------------------------------|
| 1-chloro-2,3-epoxypropane | 106-89-8 | 100                   | *                              |

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Skin corrosion or irritation  
Serious eye damage or eye irritation  
Respiratory or skin sensitisation

**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).



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Date of first issue: 07/18/2015**California Prop. 65**

This product contains a chemical that is at or below California Propositions 65's "safe harbor level" as determined via a risk assessment. Therefore, the chemical is not required to be listed as a Prop 65 chemical on the SDS or label.

**The components of this product are reported in the following inventories:**

|        |   |
|--------|---|
| CH INV | : The formulation contains substances listed on the Swiss Inventory, Not 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   | : 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**

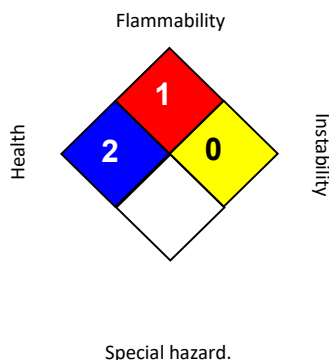
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**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.

**SECTION 16. OTHER INFORMATION****Further information****NFPA 704:****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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ACGIH : USA. ACGIH Threshold Limit Values (TLV)

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OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1  
Limits for Air Contaminants

OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3  
Mineral Dusts

ACGIH / TWA : 8-hour, time-weighted average

OSHA Z-1 / TWA : 8-hour time weighted average

OSHA Z-3 / 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.

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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.

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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