

**ARALDITE® AW 9102 CI**

Version 1.0      Revision Date: 01/21/2021      SDS Number: 400000008782      Date of last issue: -  
Date of first issue: 01/21/2021

Print Date 06/08/2021

**SECTION 1. IDENTIFICATION**

Product name : ARALDITE® AW 9102 CI

**Manufacturer or supplier's details**Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : P.O. Box 4980The Woodlands,  
TX 77387  
United States of America (USA)

Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : Global\_Product\_EHS\_AdMat@huntsman.com

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

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

Recommended use : Adhesives

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 2

Chronic aquatic toxicity : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Danger

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H411 Toxic to aquatic life with long lasting effects.Precautionary statements : **Prevention:**

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P261 Avoid breathing mist or vapours.  
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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P362 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	30 - 50
calcium carbonate	471-34-1	30 - 50
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	5 - 10
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	2530-83-8	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.  
Consult a physician.  
Show this safety data sheet to the doctor in attendance.  
Treat symptomatically.

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- Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.  
Get medical attention if symptoms occur.
- 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 : 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.  
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.  
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.  
Avoid inhalation, ingestion and contact with skin and eyes.  
No action shall be taken involving any personal risk or without suitable training.  
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Notes to physician : Treat symptomatically.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion : Carbon oxides

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products : Halogenated compounds

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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.

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 : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.  
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.  
To avoid spills during handling keep bottle on a metal tray.  
Dispose of rinse water in accordance with local and national regulations.

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.

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Keep in properly labelled containers.

- Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.
- Recommended storage temperature : 41 - 95 °F / 5 - 35 °C
- 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
calcium carbonate	471-34-1	TWA (Respirable)	5 mg/m <sup>3</sup> (Calcium carbonate)	NIOSH REL
		TWA (total)	10 mg/m <sup>3</sup> (Calcium carbonate)	NIOSH REL

## Personal protective equipment

- Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
- Hand protection
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.  
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

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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	: viscous liquid
Colour	: off-white
Odour	: mild
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 is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 302 °F / > 150 °C Method: closed cup Based on data from similar materials
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	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: 1.35 - 1.45 g/cm <sup>3</sup>
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.

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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 : 10,000 - 20,000 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 : carbon dioxide  
carbon monoxide  
Halogenated compounds

**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

Acute inhalation toxicity - Product : Acute toxicity estimate: 18.87 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

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

**Skin corrosion/irritation****Components:**

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

Species: Rabbit

Exposure time: 4 h

Assessment: Irritating to skin.

Method: OECD Test Guideline 404

Result: Irritating to skin.

calcium carbonate:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

1,4-bis(2,3-epoxypropoxy)butane:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

GLP: yes

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

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

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

Species: Rabbit

Result: Irritating to eyes.

Assessment: Irritating to eyes.

Method: OECD Test Guideline 405

calcium carbonate:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

1,4-bis(2,3-epoxypropoxy)butane:

Species: Rabbit

Assessment: Risk of serious damage to eyes.

Method: OECD Test Guideline 405

GLP: yes

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Species: Rabbit

Result: Risk of serious damage to eyes.

Assessment: Severe eye irritation

Method: OECD Test Guideline 405



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**Respiratory or skin sensitisation****Components:**

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

Test Type: Local lymph node assay (LLNA)

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: The product is a skin sensitizer, sub-category 1B.

1,4-bis(2,3-epoxypropoxy)butane:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

GLP: yes

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Does not cause skin sensitisation.

**Components:**

1,4-bis(2,3-epoxypropoxy)butane:

Assessment: Harmful if inhaled.

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

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

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Metabolic activation: without metabolic activation

Result: positive

Test Type: reverse mutation assay

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)

Result: negative

calcium carbonate:

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

Method: OECD Test Guideline 471

Result: negative

Concentration: 0 - 250 µg/L

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

1,4-bis(2,3-epoxypropoxy)butane:

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Genotoxicity in vitro : Test Type: reverse mutation assay  
 Concentration: 10 - 5000 ug/plate  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 471  
 Result: positive  
 GLP: yes  
 Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: Chromosome aberration test in vitro  
 Test system: Chinese hamster lung cells  
 Concentration: 1 - 100 µg/L  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 473  
 Result: positive  
 GLP: yes  
 Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: In vitro mammalian cell gene mutation test  
 Test system: Chinese hamster lung cells  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 476  
 Result: positive  
 GLP: no  
 Remarks: Not classified due to data which are conclusive although insufficient for classification.

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:  
 Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 476  
 Result: positive

Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 471  
 Result: positive

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Genotoxicity in vivo : Test Type: in vivo assay  
 Species: Mouse (male)  
 Cell type: Germ  
 Application Route: Oral  
 Dose: 3333, 10000 mg/kg  
 Result: negative

Test Type: gene mutation test  
 Species: Rat (male)  
 Cell type: Somatic  
 Application Route: Oral  
 Dose: 50,250,500,1000 mg/kg bw/day  
 Method: OECD Test Guideline 488  
 Result: negative

1,4-bis(2,3-epoxypropoxy)butane:  
 Genotoxicity in vivo : Test Type: In vivo micronucleus test

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Species: Mouse (male)  
Cell type: Somatic  
Application Route: Oral  
Exposure time: 4 d  
Dose: 187.5 - 750 mg/kg  
Method: OECD Test Guideline 474  
Result: negative  
GLP: yes

Test Type: unscheduled DNA synthesis assay  
Species: Rat  
Cell type: Liver cells  
Application Route: Oral  
Method: OECD Test Guideline 486  
Result: negative

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:  
Genotoxicity in vivo : Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 474  
Result: positive

Application Route: Intraperitoneal injection  
Dose: 1600 mg/kg  
Result: negative

Application Route: Oral  
Result: negative

**Components:**

1,4-bis(2,3-epoxypropoxy)butane:  
Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen., Animal testing did not show any mutagenic effects.

**Carcinogenicity****Components:**

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

Species: Rat, male  
Application Route: Oral  
Exposure time: 24 month(s)  
Dose: 0, 2, 15, or 100 mg/kg bw/day  
Frequency of Treatment: 7 days/week  
NOAEL: 15 mg/kg bw/day

Method: OECD Test Guideline 453  
Result: negative  
Target Organs: Digestive organs

Species: Mouse, male  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: 0, 0.1, 10, 100 mg/kg bw/day  
Frequency of Treatment: 3 days/week

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NOEL: 0.1 mg/kg body weight

Method: OECD Test Guideline 453  
Result: negative  
Target Organs: Digestive organs

Species: Rat, female  
Application Route: Dermal  
Exposure time: 24 month(s)  
Dose: 0.1, 100, 1000 mg/kg bw/day  
Frequency of Treatment: 5 days/week  
NOEL: 100 mg/kg body weight

Method: OECD Test Guideline 453  
Result: negative

Species: Rat, female  
Application Route: Oral  
Exposure time: 24 month(s)  
Dose: 0, 2, 15, or 100 mg/kg bw/day  
Frequency of Treatment: 7 days/week  
NOAEL: 100 mg/kg bw/day

Method: OECD Test Guideline 453  
Result: negative  
Target Organs: Digestive organs

Species: Rat, females  
Application Route: Oral  
Exposure time: 24 month(s)  
Dose: 0, 2, 15, or 100 mg/kg bw/day  
Frequency of Treatment: 7 days/week  
NOEL: 2 mg/kg bw/day

Method: OECD Test Guideline 453  
Result: negative  
Target Organs: Digestive organs

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Species: Mouse, male  
Application Route: Dermal  
Exposure time: 482 days  
Dose: 5 mg/kg  
Frequency of Treatment: 3 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.

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**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: 0, 50, 180, 540 or 750 milligram per kilogram  
Duration of Single Treatment: 238 d  
Frequency of Treatment: 1 daily  
General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight  
General Toxicity F1: No-observed-effect level: 750 mg/kg body weight  
Symptoms: No adverse effects  
Method: OECD Test Guideline 416  
Result: No effects on fertility and early embryonic development were detected.

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 415  
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  
Dose: 0, 30, 100 or 300 milligram per kilogram  
Duration of Single Treatment: 28 d  
Frequency of Treatment: 1 daily  
General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level: 300 mg/kg body weight  
Method: Other guidelines  
Result: No teratogenic effects

Test Type: Pre-natal  
Species: Rabbit, female  
Application Route: Oral  
Dose: 0, 20, 60 or 180 milligram per kilogram  
Duration of Single Treatment: 13 d  
Frequency of Treatment: 1 daily  
General Toxicity Maternal: No observed adverse effect level:

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60 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level:  
180 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Test Type: Pre-natal  
Species: Rat, female  
Application Route: Oral  
Dose: 0, 60, 180 and 540 milligram per kilogram  
Duration of Single Treatment: 10 d  
Frequency of Treatment: 1 daily  
General Toxicity Maternal: No observed adverse effect level:  
180 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level: >  
540 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

**1,4-bis(2,3-epoxypropoxy)butane:**

Test Type: Pre-natal  
Species: Rat, female  
Application Route: Oral  
Dose: 0/30/100/300 mg/kg bw/day  
Duration of Single Treatment: 17 d  
General Toxicity Maternal: No observed adverse effect level:  
300 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level:  
300 mg/kg body weight  
Method: OECD Test Guideline 414  
GLP: yes  
Remarks: Information given is based on data obtained from  
similar substances.

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Species: Rabbit, female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
200 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:**

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

Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: oral (gavage)  
Exposure time: 14 Weeks  
Number of exposures: 7 d  
Dose: 0, 50, 250, 1000 mg/kg/day  
Method: OECD Test Guideline 408

Species: Rat, male and female  
NOAEL: >= 10 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 5 d  
Dose: 0, 10, 100, 1000 mg/kg/day  
Method: OECD Test Guideline 411

Species: Mouse, male  
NOAEL: 100 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks  
Number of exposures: 3 d  
Dose: 0, 1, 10, 100 mg/kg/day  
Method: OECD Test Guideline 411

1,4-bis(2,3-epoxypropoxy)butane:

Species: Rat, male and female  
NOAEL: 200 mg/kg  
Application Route: Oral  
Exposure time: 28 d  
Number of exposures: daily  
Dose: 25, 100, 200, 400 mg/kg  
Method: Subacute toxicity

Species: Rat, male and female  
NOAEL: 263 mg/kg  
Application Route: Oral  
Exposure time: 90 h  
Number of exposures: daily  
Dose: 0,30,100,300 mg/kg bw/day  
Method: OECD Test Guideline 408  
GLP: yes

Remarks: Information given is based on data obtained from similar substances.

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Species: Rat, male and female  
NOEC: > 1000 mg/m<sup>3</sup>  
Application Route: Inhalation  
Test atmosphere: dust/mist  
Exposure time: 672 h  
Number of exposures: 5 d  
Method: OECD Test Guideline 412

Species: Rat, male and female

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NOAEL: 1000 mg/kg/d  
Application Route: Ingestion  
Exposure time: 2,160 h  
Number of exposures: 7 d  
Method: Subchronic toxicity

**Components:**

1,4-bis(2,3-epoxypropoxy)butane:  
Repeated dose toxicity - : Harmful if inhaled.  
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**

Ingestion: 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)): 2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

calcium carbonate:  
Toxicity to fish : LC50: > 56,000 mg/l



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Exposure time: 96 h

**1,4-bis(2,3-epoxypropoxy)butane:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 24 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water  
Method: OECD Test Guideline 203  
GLP: no

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 55 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.1.

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

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**1,4-bis(2,3-epoxypropoxy)butane:**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 75 mg/l  
End point: Immobilization  
Exposure time: 24 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water  
Method: OECD Test Guideline 202  
GLP: no

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Toxicity to daphnia and other aquatic invertebrates : LC50: 324 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/aquatic plants : EC50: 11 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: EPA-660/3-75-009

NOEC: 4.2 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water

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Method: EPA-660/3-75-009

**1,4-bis(2,3-epoxypropoxy)butane:**

Toxicity to algae/aquatic plants : EL50 (Pseudokirchneriella subcapitata (green algae)): > 160 mg/l

Exposure time: 72 h

Test Type: static test

Analytical monitoring: yes

Test substance: Fresh water

Method: OECD Test Guideline 201

GLP: yes

NOELR (Pseudokirchneriella subcapitata (green algae)): 40 mg/l

Exposure time: 72 h

Test Type: static test

Analytical monitoring: yes

Test substance: Fresh water

Method: OECD Test Guideline 201

GLP: yes

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Toxicity to algae/aquatic plants : EC50: 119 mg/l

Exposure time: 168 h

Test Type: static test

Test substance: Fresh water

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

Toxicity to fish (Chronic toxicity) : No data available

**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

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 100 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

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Test Type: static test  
Test substance: Fresh water

**1,4-bis(2,3-epoxypropoxy)butane:**

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water  
Method: OECD Test Guideline 209  
GLP: no

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****Components:****[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

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

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

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

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Chronic aquatic toxicity : Harmful 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'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:**

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

**1,4-bis(2,3-epoxypropoxy)butane:**

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge

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Concentration: 20 mg/l  
 Result: Not readily biodegradable.  
 Biodegradation: 43 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301F  
 GLP: yes

Test Type: aerobic  
 Inoculum: Sewage (STP effluent)  
 Concentration: 20 mg/l  
 Result: Not readily biodegradable.  
 Biodegradation: 38 % (Dissolved organic carbon (DOC))  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301E  
 GLP: no

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Biodegradability : Inoculum: activated sludge  
 Result: Not readily biodegradable.  
 Biodegradation: 37 %  
 Exposure time: 28 d  
 Method: Directive 67/548/EEC Annex V, C.4.A.

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

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[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Stability in water : Degradation half life(DT50): 6.5 hrs (76.1 °F / 24.5 °C) pH: 7  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Degradation half life(DT50): 0.15 hrs (76.1 °F / 24.5 °C) pH: 5  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Degradation half life(DT50): 0.13 hrs (76.1 °F / 24.5 °C) pH: 9  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Photodegradation : No data available

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.

**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

1,4-bis(2,3-epoxypropoxy)butane:

Partition coefficient: n-octanol/water : log Pow: -0.269 (77 °F / 25 °C)  
 pH: 6.7  
 Method: OECD Test Guideline 117  
 GLP: yes

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:

Partition coefficient: n-octanol/water : log Pow: -2.6 (77 °F / 25 °C)

**Mobility in soil**

Mobility : No data available

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
 Distribution among environmental compartments : Koc: 445  
 1,4-bis(2,3-epoxypropoxy)butane:  
 Distribution among environmental compartments : Koc: 12.59  
 Method: OECD Test Guideline 121

Stability in soil : No data available

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**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.  
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**

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**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
Environmentally hazardous	: yes

**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)
Remarks	: Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

**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.

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**SECTION 15. REGULATORY INFORMATION****CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
methanol	67-56-1	5000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

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

**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 can expose you to chemicals including silicon dioxide, which is/are known to the State of California to cause cancer, and methanol, 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:**

DSL : All components of this product are on the Canadian DSL

AIIC : On the inventory, or in compliance with the inventory

NZIoC : On the inventory, or in compliance with the inventory

ENCS : Not 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 : All substances listed as active on the TSCA inventory

**Inventories**

AIIC (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.



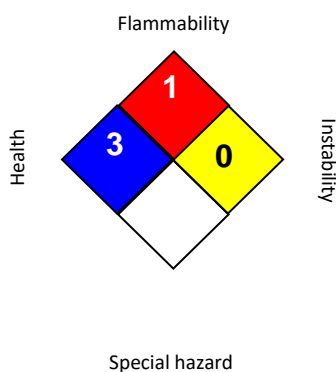
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**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

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>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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NIOSH REL : USA. NIOSH Recommended Exposure Limits

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek

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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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