

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
 Date of first issue: 10/03/2017

Print Date 05/22/2019

**SECTION 1. IDENTIFICATION**

Product name : ARALDITE® 8579 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 : SDS@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  
 Restrictions on use : For industrial use only.

**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.



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## ARALDITE® 8579 US

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

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 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)
barium sulfate	7727-43-7	30 - 50
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	25 - 30
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	9003-36-5	5 - 10
Silicon, amorphous	7631-86-9	1 - 5
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	1 - 2.5
1,3,5-tris(oxiranymethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	2451-62-9	0.25 - 1

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

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

**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.
- 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.
- Hazardous combustion products : Halogenated compounds  
Carbon dioxide (CO<sub>2</sub>)  
Carbon monoxide
- 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.

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

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 : 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.
- Recommended storage temperature : 36 - 104 °F / 2 - 40 °C
- Further information on storage stability : Stable under normal conditions.

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

## ARALDITE® 8579 US

Version  
1.1Revision Date:  
04/01/2019SDS Number:  
400001012725Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
barium sulfate	7727-43-7	TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-1
		TWA (respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
Silicon, amorphous	7631-86-9	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
		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
		TWA	6 mg/m <sup>3</sup> (Silica)	NIOSH REL
1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	2451-62-9	TWA	0.05 mg/m <sup>3</sup>	ACGIH

**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 : 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.

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/ 22/2019

- 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 : beige
- Odour : No data is available on the product itself.
- 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 : > 199 °F / > 93 °C  
Method: 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 : No data is available on the product itself.
- Relative vapour density : No data is available on the product itself.
- Relative density : 1.65
- Density : No data is available on the product itself.
- Solubility(ies)  
Water solubility : negligible
- Solubility in other solvents : No data is available on the product itself.

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

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 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.
<b>Acute toxicity</b>		
Acute oral toxicity - Product	:	Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity - Product	:	Acute toxicity estimate: 75 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity -	:	Acute toxicity estimate : > 5,000 mg/kg

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

Product      Method: Calculation method

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

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

barium sulfate:

Species: human skin

Assessment: No skin irritation

Result: No skin irritation

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

Species: Rabbit

Assessment: Mild skin irritant

Method: OECD Test Guideline 404

Result: Irritating to skin.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Irritating to skin.

Silicon, amorphous:

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

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

barium sulfate:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

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

Species: Rabbit

Result: Irritating to eyes.

Assessment: Mild eye irritant

Method: OECD Test Guideline 405



**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Silicon, amorphous:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

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

Species: Rabbit

Result: Risk of serious damage to eyes.

Method: OECD Test Guideline 405

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species: Rabbit

Result: Risk of serious damage to eyes.

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

barium sulfate:

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: Does not cause skin sensitisation.

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

Exposure routes: Skin

Species: Mouse

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 429

Result: Causes sensitisation.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

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.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Assessment: No data available

**ARALDITE® 8579 US**Version  
1.1Revision Date:  
04/01/2019SDS Number:  
400001012725Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

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

barium sulfate:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negativeMetabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negativeMetabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

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: positiveConcentration: 0 - 5000 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: positive

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Genotoxicity in vitro

: Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: positive: Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: positiveMetabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: positive

Silicon, amorphous:

Genotoxicity in vitro

Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negativeMetabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negativeMetabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

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

Genotoxicity in vitro

Concentration: 10 - 5000 ug/plate  
Metabolic activation: with and without metabolic activation

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

Method: OECD Test Guideline 471  
Result: positive  
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Concentration: 1 - 100 µg/L  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: positive  
Remarks: Not classified due to data which are conclusive although insufficient for classification.

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

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

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 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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Genotoxicity in vivo : Cell type: Somatic  
Application Route: Oral  
Exposure time: 48 h  
Dose: 2000 mg/kg  
Method: OECD Test Guideline 474  
Result: negative

Cell type: Somatic  
Application Route: Oral  
Dose: 2000 mg/kg  
Method: OECD Test Guideline 486  
Result: negative

Silicon, amorphous:

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

## ARALDITE® 8579 US

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
 Date of first issue: 10/03/2017

Print Date 05/22/2019

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

Genotoxicity in vivo

Test Type: In vivo micronucleus test

Species: Mouse

Cell type: Somatic

Application Route: Oral

Exposure time: 4 d

Dose: 187.5 - 750 mg/kg

Method: OECD Test Guideline 474

Result: negative

Test Type: unscheduled DNA synthesis assay

Species: Rat

Cell type: Liver cells

Application Route: Oral

Method: OECD Test Guideline 486

Result: negative

## 1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Genotoxicity in vivo

Cell type: Germ

Application Route: Oral

Method: OECD Test Guideline 483

Result: positive

Cell type: Somatic

Application Route: Oral

Method: OECD Test Guideline 474

Result: positive

**Components:**

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

Germ cell mutagenicity-  
AssessmentWeight of evidence does not support classification as a germ  
cell mutagen.

## 1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Germ cell mutagenicity-  
Assessment

In vitro tests showed mutagenic effects

Germ cell mutagenicity-  
Assessment

No data available

**Carcinogenicity****Components:**

barium sulfate:

Species: Rat, male and female

Application Route: Oral

Exposure time: 104 weeks

Dose: 60 - 75 mg/kg

Method: OPPTS 870.4200

Result: negative

Species: Mouse, male and female

Application Route: Oral

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

Dose: 160 - 200 mg/kg  
Method: OPPTS 870.4200  
Result: negative

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

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species: Rat, male  
Application Route: Oral  
Exposure time: 99 weeks  
Dose: 4.36 mg/kg  
Frequency of Treatment: 24 hour  
Method: OECD Test Guideline 451  
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

**ARALDITE® 8579 US**

Version  
1.1

Revision Date:  
04/01/2019

SDS Number:  
400001012725

Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

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.

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species: Rat, male  
Application Route: Oral  
Target Organs: Reproductive organs  
Method: OECD Test Guideline 408  
Result: negative

**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  
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

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species: Rabbit, female  
Application Route: Dermal  
General Toxicity Maternal: No observed adverse effect level:  
30 mg/kg body weight  
Result: No teratogenic effects

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

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****Components:**

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Exposure routes: Ingestion

Target Organs: Cardio-vascular system

Assessment: May cause damage to organs through prolonged or repeated exposure.

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

barium sulfate:

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

Species: Rat  
LOEC: >= 104 mg/kg, 40 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: dust/mist  
Exposure time: 5 h  
Number of exposures: 5 d  
Method: Subchronic toxicity

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  
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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Species: Rat, male and female  
NOAEL: 250 mg/kg  
Application Route: Ingestion  
Exposure time: 13 Weeks  
Number of exposures: 7 d  
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



**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

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

Species: Rat, male and female

NOAEL: 200 mg/kg

Application Route: Ingestion

Exposure time: 28 d

Number of exposures: 7 d

Method: Subacute toxicity

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Species: Mouse, male and female

: < 100 mg/m<sup>3</sup>

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 2,256 h

Number of exposures: 7 d

Method: Subchronic toxicity

Repeated dose toxicity - : No data available  
Assessment

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information**

Ingestion: No data available

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

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

barium sulfate:

Toxicity to fish : LC50: 174 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Toxicity to fish : LC50 (Fish): 2.54 mg/l  
Exposure time: 96 h  
Method: Calculation method

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

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

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 24 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 77 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

**Components:**

barium sulfate:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 14.5 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

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

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.7 mg/l

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

aquatic invertebrates  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.55 mg/l  
Exposure time: 48 h  
Method: Calculation method

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**Components:**

barium sulfate:  
Toxicity to algae/aquatic plants : EC50: > 100 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

NOEC: > 1.15 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Toxicity to algae/aquatic plants : 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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 1.8 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

Method: OECD Test Guideline 201

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

1,4-bis(2,3-epoxypropoxy)butane:  
 Toxicity to algae/aquatic plants : EL50: > 160 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 201

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
 Toxicity to algae/aquatic plants : EbC50 (Desmodesmus subspicatus (green algae)): 29 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

Toxicity to fish (Chronic toxicity) : No data available

**Components:**

barium sulfate:  
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.8 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
 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  
 Remarks: Information given is based on data obtained from similar substances.

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

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

**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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
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  
Test substance: Fresh water  
Method: OECD Test Guideline 209

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Toxicity to microorganisms : IC50: > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 209

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:**

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

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

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:

## ARALDITE® 8579 US

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:

Biodegradability : Inoculum: activated sludge  
 Concentration: 3 mg/l  
 Result: Not biodegradable  
 Biodegradation: ca. 0 %  
 Exposure time: 28 d  
 Method: Directive 67/548/EEC Annex V, C.4.E.

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

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:

Biodegradability : Inoculum: activated sludge  
 Result: Not readily biodegradable.  
 Biodegradation: > 0.5 - < 1 %  
 Exposure time: 44 d  
 Method: OECD Test Guideline 301B

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

## ARALDITE® 8579 US

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
 Date of first issue: 10/03/2017

Print Date 05/22/2019

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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
 Stability in water : Degradation half life(DT50): 6.66 d (77 °F / 25 °C) pH: 7  
 Method: OECD Test Guideline 111  
 Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

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

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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
 Bioaccumulation : Species: Fish  
 Bioconcentration factor (BCF): 150  
 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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
 Partition coefficient: n-octanol/water : log Pow: 2.7 - 3.6  
 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

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
 Partition coefficient: n-octanol/water : log Pow: -0.8 (203 °F / 95 °C)  
 pH: 5 - 8  
 Method: OECD Test Guideline 107

**Mobility in soil**

Mobility : No data available

**Components:**

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

**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

Distribution among environmental compartments : Koc: 445  
 Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol:  
 Distribution among environmental compartments : Koc: 4460  
 Method: OECD Test Guideline 121

1,4-bis(2,3-epoxypropoxy)butane:  
 Distribution among environmental compartments : Koc: 12.59  
 Method: OECD Test Guideline 121

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
 Distribution among environmental compartments : Koc: 31.7  
 Method: OECD Test Guideline 121

Koc: 50.1  
 Method: OECD Test Guideline 121

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

**Components:**

1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione:  
 Results of PBT and vPvB assessment : This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

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



**ARALDITE® 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

**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, BISPHENOL F 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, BISPHENOL F 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.

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
 Date of first issue: 10/03/2017

Print Date 05/22/2019

**National Regulations**
**DOT Classification**

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

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

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
1-chloro-2,3-epoxypropane	106-89-8	100	*
methanol	67-56-1	5000	*

\*: 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).

**California Prop. 65**

**WARNING:** This product can expose you to chemicals including methanol, 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:

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
Date of first issue: 10/03/2017

Print Date 05/22/2019

CH INV	: The formulation contains substances listed on the Swiss 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	: Not in compliance with the inventory
KECI	: Not 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.

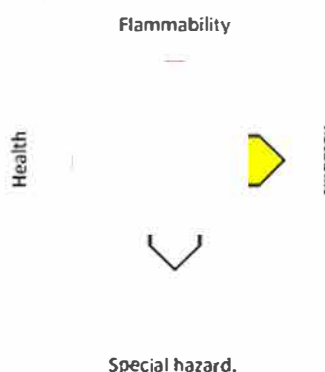
**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

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

**ARALDITE® 8579 US**

Version 1.1      Revision Date: 04/01/2019      SDS Number: 400001012725      Date of last issue: 10/03/2017  
 Date of first issue: 10/03/2017

Print Date 05/22/2019

**SECTION 16. OTHER INFORMATION****Further information****NFPA 704:****HMIS® IV:**

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

Revision Date : 04/01/2019

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

NIOSH REL : USA. NIOSH Recommended Exposure Limits

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

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

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

OSHA Z-3 / TWA : 8-hour time weighted average

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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.

# SAFETY DATA SHEET

**HUNTSMAN**

Enriching lives through innovation

## ARALDITE® 8579 US

Version	Revision Date:	SDS Number:	Date of last issue: 10/03/2017
1.1	04/01/2019	400001012725	Date of first issue: 10/03/2017

Print Date 05/22/2019

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**HARDENER 8579 US**

Version 1.0      Revision Date: 06/30/2017      SDS Number: 400001012724      Date of last issue: -  
Date of first issue: 06/30/2017

**SECTION 1. IDENTIFICATION**

Product name : HARDENER 8579 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**

Skin corrosion : Category 1B  
Serious eye damage : Category 1  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 1B  
Acute aquatic toxicity : Category 2  
Chronic aquatic toxicity : Category 2

**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.  
H360F May damage fertility.  
H411 Toxic to aquatic life with long lasting effects.

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

**HARDENER 8579 US**

Version 1.0	Revision Date: 06/30/2017	SDS Number: 400001012724	Date of last issue: - Date of first issue: 06/30/2017
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P202 Do not handle until all safety precautions have been read and understood.

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

P264 Wash skin thoroughly after handling.

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

P273 Avoid release to the environment.

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

**Response:**

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.

P391 Collect spillage.

**Storage:**

P405 Store locked up.

**Disposal:**

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

**Other hazards**

None known.

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

Substance / Mixture : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration (% w/w)
barium sulfate	7727-43-7	30 - 50
Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine	68082-29-1	25 - 30
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8	5 - 10
trientine	112-24-3	3 - 5
2,2'-iminodi(ethylamine)	111-40-0	3 - 5
4,4'-isopropylidenediphenol	80-05-7	1 - 2.5
quartz (SiO <sub>2</sub> )	14808-60-7	0.1 - 1

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : No data is available on the product itself.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion : No data is available on the product itself.



**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

products

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.  
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.  
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.

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.

**HARDENER 8579 US**

Version 1.0      Revision Date: 06/30/2017      SDS Number: 400001012724      Date of last issue: -  
Date of first issue: 06/30/2017

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
barium sulfate	7727-43-7	TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-1
		TWA (respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
2,2'-iminodi(ethylamine)	111-40-0	TWA	1 ppm	ACGIH
quartz (SiO <sub>2</sub> )	14808-60-7	TWA (respirable)	10 mg/m <sup>3</sup> / %SiO <sub>2</sub> +2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO <sub>2</sub> +5	OSHA Z-3
		TWA (Respirable fraction)	0.025 mg/m <sup>3</sup> (Silica)	ACGIH
		TWA (Respirable dust)	0.05 mg/m <sup>3</sup>	OSHA Z-1

**Personal protective equipment**

Hand protection

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 : grey

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

Odour : No data is available on the product itself.

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 : > 93 °C  
Method: 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 : No data is available on the product itself.

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

Relative density : 1.6

Density : No data is available on the product itself.

Solubility(ies)

Water solubility : partly 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 : No data is available on the product itself.

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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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

**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 : 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:**

Result: Causes burns.

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.

**Components:**

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Assessment: May cause an allergic skin reaction.

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

barium sulfate:

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

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 473  
Result: negative

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Test system: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

Test Type: Micronucleus test  
Test system: Human lymphocytes  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative

Test Type: Ames test  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative

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

trientine:

Genotoxicity in vitro : Concentration: 0 - 200 µg/L  
Metabolic activation: negative

**HARDENER 8579 US**

Version 1.0      Revision Date: 06/30/2017      SDS Number: 400001012724      Date of last issue: -  
Date of first issue: 06/30/2017

Method: OECD Test Guideline 482  
Result: negative

4,4'-isopropylidenediphenol:  
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Result: negative

**Components:**

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

2,2'-iminodi(ethylamine):  
Genotoxicity in vivo : Cell type: Somatic  
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

**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Germ cell mutagenicity-  
Assessment : In vitro tests did not show mutagenic effects

Germ cell mutagenicity-  
Assessment : No data available

**Carcinogenicity****Components:**

barium sulfate:  
Species: Rat, (male and female)  
Application Route: Oral  
Exposure time: 104 weeks  
Dose: 60 - 75 mg/kg  
Method: OPPTS 870.4200  
Result: negative

Species: Mouse, (male and female)  
Application Route: Oral  
Dose: 160 - 200 mg/kg  
Method: OPPTS 870.4200  
Result: negative

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species: Mouse, (male)  
 Application Route: Dermal  
 Exposure time: 20 month(s)  
 Frequency of Treatment: 3 daily  
 Result: negative

trientine:

Species: Mouse, (male)  
 Application Route: Dermal  
 Dose: 42 mg/kg  
 Frequency of Treatment: 3 days/week  
 Method: OECD Test Guideline 451  
 Result: negative

Species: Mouse, (male)  
 Application Route: Dermal  
 Exposure time: 104 weeks  
 Dose: 16.8 mg/kg  
 Frequency of Treatment: 3 days/week  
 Method: OECD Test Guideline 451

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** Group 1: Carcinogenic to humans

quartz (SiO<sub>2</sub>)

**ACGIH** Suspected human carcinogen

quartz (SiO<sub>2</sub>)

**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** Known to be human carcinogen

quartz (SiO<sub>2</sub>)

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 0, 100, 300, 1000 mg/kg bw/d  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: No observed adverse effect level:  
1,000 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: Animal testing did not show any effects on fertility.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

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

2,2'-iminodi(ethylamine):

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.

**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Effects on foetal development : Species: Rat, male and female  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
15 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level: 15  
mg/kg body weight  
Embryo-foetal toxicity: No observed adverse effect level: 15  
mg/kg body weight  
Method: OECD Test Guideline 422  
Result: No effects on fertility and early embryonic  
development were detected.

trientine:

Species: Rat  
Application Route: Oral  
General Toxicity Maternal: No observed adverse effect level:  
> 750 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects



**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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

2,2'-iminodi(ethylamine):

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

**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:  
Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

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.

**STOT - repeated exposure**

No data available

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

barium sulfate:  
Species: Rat

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

LOEC:  $\geq$  104 mg/kg, 40 mg/m<sup>3</sup>  
Application Route: Ingestion  
Test atmosphere: dust/mist  
Exposure time: 5 h  
Number of exposures: 5 d  
Method: Subchronic toxicity

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:  
Species: Rat, male and female  
NOAEL: 1000 mg/kg  
NOAEL: 1,000 mg/kg  
Application Route: Oral  
Exposure time: 14 days  
Number of exposures: Once daily  
Dose: 0, 100, 300, 1000 mg/kg bw/d  
Group: yes  
Method: OECD Test Guideline 422  
Target Organs: Liver

N<sup>1</sup>-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:  
Species: Rat, male and female  
NOEC: 550 ppm  
Application Route: Ingestion  
Test atmosphere: vapour  
Exposure time: 3 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

Species: Mouse, male  
NOAEL:  $\geq$  56.3 mg/kg/d  
Application Route: Skin contact  
Exposure time: 20 h  
Number of exposures: 3 d  
Method: Chronic toxicity

trientine:  
Species: Rat, male and female  
NOAEL: 50 mg/kg/d  
Application Route: Ingestion  
Exposure time: 26 Weeks  
Number of exposures: 7 d  
Method: Subchronic toxicity

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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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  
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

**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Repeated dose toxicity - Assessment : 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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

**Neurological effects**

No data available

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

Remarks: No data available

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

barium sulfate:

Toxicity to fish : LC50: 174 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 7.07 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

trientine:

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

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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

**Components:**

barium sulfate:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 14.5 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.07 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9.2 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

trientine:

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

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)):

**Components:**

barium sulfate:

Toxicity to algae : EC50: > 100 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

NOEC: > 1.15 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 4.34 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

EC10 (Selenastrum capricornutum (green algae)): 1.78 mg/l  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 201

trientine:

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

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

4,4'-isopropylidenediphenol:

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

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

**HARDENER 8579 US**

Version 1.0      Revision Date: 06/30/2017      SDS Number: 400001012724      Date of last issue: -  
Date of first issue: 06/30/2017

Test substance: Fresh water  
Method: Fish Life Cycle Toxicity  
Remarks: Toxic to aquatic organisms.

**Components:**

barium sulfate:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.8 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211

trientine:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 1.9 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

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

**Components:**

4,4'-isopropylidenediphenol:

M-Factor (Chronic aquatic toxicity) : 1

**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to microorganisms : EC50 (activated sludge): 384 mg/l  
Exposure time: 3 h  
Test Type: static test  
Method: OECD Test Guideline 209

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to microorganisms : EC50 (Pseudomonas putida): 181 mg/l  
Exposure time: 16 h  
Test Type: static test  
Test substance: Fresh water  
Method: DIN 38 412 Part 8

trientine:

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

**Components:**

2,2'-iminodi(ethylamine):

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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.

**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:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 - 70 %  
Exposure time: 74 d  
Method: OECD Test Guideline 301B

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 28 d  
Method: ISO Method, other

trientine:

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

Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 20 %  
Exposure time: 84 d



**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

Method: Inherent Biodegradability: Modified SCAS Test

2,2'-iminodi(ethylamine):  
Biodegradability: Inoculum: activated sludge  
Result: Readily biodegradable.  
Biodegradation: 87 %  
Exposure time: 21 d  
Method: OECD Test Guideline 301D4,4'-isopropylidenediphenol:  
Biodegradability: Result: Not readily biodegradable.  
Biodegradation: 1 - 2 %  
Exposure time: 28 dBiochemical 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 %Impact on Sewage  
Treatment

: No data available

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

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Bioaccumulation

: Bioconcentration factor (BCF): 77.4  
Remarks: Does not bioaccumulate.2,2'-iminodi(ethylamine):  
Bioaccumulation: Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 0.3 - 6.3

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

Exposure time: 42 d  
 Test substance: Fresh water  
 Method: flow-through test  
 Remarks: Bioaccumulation is unlikely.

**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Partition coefficient: n-octanol/water : log Pow: 10.34  
 Method: OECD Test Guideline 117

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Partition coefficient: n-octanol/water : log Pow: 0.5

log Pow: -0.56 (25 °C)  
 pH: 11.6  
 Method: OECD Test Guideline 107

trientine:

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

2,2'-iminodi(ethylamine):

Partition coefficient: n-octanol/water : log Pow: -1.58 (20 °C)  
 pH: 7

**Mobility in soil**

Mobility : No data available

**Components:**

trientine:

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

2,2'-iminodi(ethylamine):

Distribution among environmental compartments : Koc: 19111

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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

**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.

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

UN/ID No. : UN 2735  
Proper shipping name : Polyamines, liquid, corrosive, n.o.s.  
(DIMETHYL DIPROPYL TRIAMINE, DIETHYLENE TRIAMINE)  
Class : 8  
Packing group : II  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 855  
Packing instruction (passenger aircraft) : 851

**IMDG**

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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

(DIMETHYL DIPROPYL TRIAMINE, DIETHYLENE TRIAMINE)

Class : 8  
Packing group : II  
Labels : 8  
EmS Code : F-A, S-B  
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 2735  
Proper shipping name : POLYAMINES, LIQUID, CORROSIVE, N.O.S.  
(DIMETHYL DIPROPYL TRIAMINE, DIETHYLENE TRIAMINE)  
Class : 8  
Packing group : II  
Labels : CORROSIVE  
ERG Code : 153  
Marine pollutant : yes

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

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

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

4,4'-isopropylidenediphenol	80-05-7	>= 1 - < 5 %
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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 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 : All components of this product are on the Canadian DSL

**HARDENER 8579 US**

Version 1.0      Revision Date: 06/30/2017      SDS Number: 400001012724      Date of last issue: -  
Date of first issue: 06/30/2017

AICS : On the inventory, or in compliance with the inventory  
 NZIoC : Not in compliance with the inventory  
 ENCS : Low volume exemption, On the inventory, or in compliance with the inventory  
 KECI : Not in compliance with the inventory  
 PICCS : Not in compliance with the inventory  
 IECSC : 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**

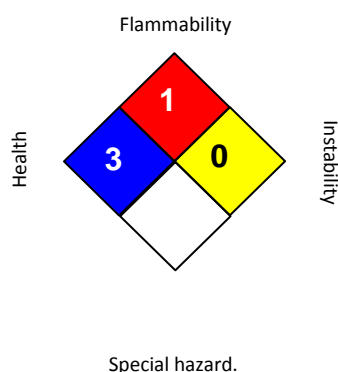
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

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

This product is subject under TSCA 5(a) to Significant New Use Restrictions (SNUR).  
 Phenol, 4-nonyl-, branched 84852-15-3

**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:****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.

Revision Date : 06/30/2017

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
 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

**HARDENER 8579 US**

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	06/30/2017	400001012724	Date of first issue: 06/30/2017

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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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