

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**HUNTSMAN**

Enriching lives through innovation

## ARALDITE® CRYSTAL RESIN

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
| Version | Revision Date: | SDS Number:  | Date of last issue: 05.02.2019  |
| 1.1     | 26.01.2021     | 400001021207 | Date of first issue: 05.02.2019 |

Print Date 13.05.2022

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Trade name : ARALDITE® CRYSTAL RESIN

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture : Epoxy constituents

#### 1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA  
Address : Everslaan 45  
3078 Everberg  
Belgium  
Telephone : +41 61 299 20 41  
Telefax : +41 61 299 20 40  
E-mail address of person responsible for the SDS : Global\_Product\_EHS\_AdMat@huntsman.com

#### 1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234  
France ORFILA: +33(0)145425959  
ASIA: +65 6336-6011  
China: +86 20 39377888  
+86 532 83889090  
India: + 91 22 42 87 5333  
Australia: 1800 786 152  
New Zealand: 0800 767 437  
USA: +1/800/424.9300

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

|  |  |
|--|--|
| Skin irritation, Category 2                    | H315: Causes skin irritation.                          |
| Eye irritation, Category 2                     | H319: Causes serious eye irritation.                   |
| Skin sensitisation, Category 1                 | H317: May cause an allergic skin reaction.             |
| Long-term (chronic) aquatic hazard, Category 2 | H411: Toxic to aquatic life with long lasting effects. |

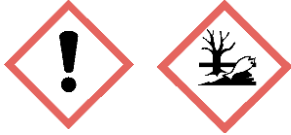
#### 2.2 Label elements

##### Labelling (REGULATION (EC) No 1272/2008)

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Hazard pictograms : 

Signal word : Warning

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

Precautionary statements : **Prevention:**  
P261 Avoid breathing mist or vapours.  
P264 Wash skin thoroughly after handling.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ eye protection/ face protection.

**Response:**  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P391 Collect spillage.

Hazardous components which must be listed on the label:

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

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane

### 2.3 Other hazards

This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

#### Hazardous components

| Chemical name | CAS-No.<br>EC-No.<br>Index-No.<br>Registration number | Classification | Concentration<br>(% w/w) |
|---------------|---|----------------|--------------------------|
|               |   |                |                          |

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|  |  |  |                  |
|--|--|--|------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane  | 1675-54-3<br>216-823-5<br>603-073-00-2<br>01-2119456619-26 | Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Skin Sens. 1; H317<br>Aquatic Chronic 2;<br>H411<br><br>specific concentration limit<br>Skin Irrit. 2; H315<br>>= 5 %<br>Eye Irrit. 2; H319<br>>= 5 % | >= 70 -<br>< 90  |
| Reaction mass of 2,2'-[methylenebis(2, ,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4, ,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2,ylmethoxy)benzyl]phenoxy}methyl)oxirane, | -<br>-<br>01-2119454392-40                                 | Skin Irrit. 2; H315<br>Skin Sens. 1; H317<br>Aquatic Chronic 2;<br>H411  | >= 2.5 -<br>< 10 |
| Terphenyl, hydrogenated  | 61788-32-7<br>262-967-7<br>01-2119488183-33                | Aquatic Chronic 4;<br>H413   | >= 2.5 -<br>< 10 |

For explanation of abbreviations see section 16.

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

### 4.1 Description of 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.
- 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.
- 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.

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- 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.

### 4.2 Most important symptoms and effects, both acute and delayed

None known.

### 4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

---

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

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

### 5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

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.

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### SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.  
Refer to protective measures listed in sections 7 and 8.

#### 6.2 Environmental precautions

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.

#### 6.3 Methods and material for containment and cleaning up

Methods for 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.

#### 6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

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.  
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

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

#### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : 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.

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Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.

Further information on storage stability : Stable under normal conditions.

Recommended storage temperature : 2 - 40 °C

### 7.3 Specific end use(s)

Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

| Components              | CAS-No.    | Value type (Form of exposure) | Control parameters            | Basis       |
|-------------------------|------------|-------------------------------|-------------------------------|-------------|
| Terphenyl, hydrogenated | 61788-32-7 | TWA                           | 2 ppm<br>19 mg/m <sup>3</sup> | 2017/164/EU |
| Further information     | Indicative |                               |                               |             |
|                         |            | STEL                          | 5 ppm<br>48 mg/m <sup>3</sup> | 2017/164/EU |
| Further information     | Indicative |                               |                               |             |
|                         |            | TWA                           | 2 ppm<br>19 mg/m <sup>3</sup> | GB EH40     |
|                         |            | STEL                          | 5 ppm<br>48 mg/m <sup>3</sup> | GB EH40     |

#### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

| Substance name  | End Use   | Exposure routes | Potential health effects   | Value                  |
|---|-----------|-----------------|----------------------------|------------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane | Workers   | Inhalation      | Long-term systemic effects | 4.93 mg/m <sup>3</sup> |
|   | Workers   | Dermal          | Long-term systemic effects | 0.75 mg/kg bw/day      |
|   | Consumers | Inhalation      | Long-term systemic effects | 0.87 mg/m <sup>3</sup> |
|   | Consumers | Dermal          | Long-term systemic effects | 0.0893 mg/kg bw/day    |
|   | Consumers | Oral            | Long-term systemic effects | 0.5 mg/kg bw/day       |
| Terphenyl, hydrogenated   | Workers   | Inhalation      | Long-term systemic effects | 8.38 mg/m <sup>3</sup> |

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|--|-----------|------------|----------------------------|------------------------|
|  | Workers   | Inhalation | Long-term local effects    | 83.8 mg/m <sup>3</sup> |
|  | Workers   | Dermal     | Long-term systemic effects | 46.3 mg/kg             |
|  | Workers   | Dermal     | Long-term local effects    | 0.2 mg/m <sup>3</sup>  |
|  | Consumers | Inhalation | Long-term systemic effects | 2.5 mg/m <sup>3</sup>  |
|  | Consumers | Inhalation | Long-term local effects    | 25 mg/m <sup>3</sup>   |
|  | Consumers | Dermal     | Long-term systemic effects | 27.8 mg/kg             |
|  | Consumers | Dermal     | Long-term local effects    | 1.23 mg/m <sup>3</sup> |
|  | Consumers | Oral       | Long-term systemic effects | 0.3 mg/kg              |

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

| Substance name  | Environmental Compartment | Value                         |
|---|---------------------------|-------------------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane | Fresh water               | 0.006 mg/l                    |
| Remarks:  | Assessment Factors        |                               |
|   | Marine water              | 0.001 mg/l                    |
|   | Assessment Factors        |                               |
|   | Fresh water sediment      | 0.341 mg/kg dry weight (d.w.) |
|   | Equilibrium method        |                               |
|   | Marine sediment           | 0.034 mg/kg dry weight (d.w.) |
|   | Equilibrium method        |                               |
|   | Soil                      | 0.065 mg/kg dry weight (d.w.) |
|   | Equilibrium method        |                               |
|   | Sewage treatment plant    | 10 mg/l                       |
|   | Assessment Factors        |                               |
|   | Secondary Poisoning       | 11 mg/kg                      |
| Terphenyl, hydrogenated   | Fresh water               | 0 mg/l                        |
|   | Marine water              | 0 mg/l                        |
|   | Intermittent use/release  | 0.001 mg/l                    |
|   | Sewage treatment plant    | 10.3 mg/l                     |
|   | Fresh water sediment      | 3.16 mg/kg                    |
|   | Marine sediment           | 0.316 mg/kg                   |
|   | Soil                      | 0.631 mg/kg                   |

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|  |                     |            |
|--|---------------------|------------|
|  | Secondary Poisoning | 2.22 mg/kg |
|--|---------------------|------------|

### 8.2 Exposure controls

#### Personal protective equipment

- Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.
- 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.
- Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Equipment should conform to EN 14387
- Filter type : Combined particulates and organic vapour type (A-P)

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- Physical state : liquid
- Colour : colourless
- Odour : slight
- Odour Threshold : No data is available on the product itself.
- pH : substance/mixture is non-soluble (in water)
- Melting point/freezing point : No data is available on the product itself.  
: > 200 °C
- Flash point : 176 °C  
Method: Pensky-Martens closed cup
- Evaporation rate : No data is available on the product itself.
- Flammability (solid, gas) : No data is available on the product itself.
- Burning rate : No data is available on the product itself.



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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 : 1.15 g/cm<sup>3</sup>

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

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

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

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

Decomposition temperature : > 200 °C

Viscosity  
Viscosity, dynamic : 18,000 - 45,000 mPa.s (25 °C)

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

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

### 9.2 Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

### 10.4 Conditions to avoid

Conditions to avoid : None known.

### 10.5 Incompatible materials

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Materials to avoid : None known.

### 10.6 Hazardous decomposition products

No hazardous decomposition products are known.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

##### Components:

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

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 420  
Assessment: The substance or mixture has no acute oral toxicity  
Remarks: No mortality observed at this dose.

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg  
Method: OECD Test Guideline 401

Terphenyl, hydrogenated:

Acute oral toxicity : LD50 (Rat, male and female): > 10,000 mg/kg  
Method: OECD Test Guideline 401

##### Components:

Terphenyl, hydrogenated:

Acute inhalation toxicity : LC50 (Rat, male and female): > 4.7 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
GLP: yes  
Assessment: The substance or mixture has no acute inhalation toxicity

##### Components:

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

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

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:

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

Terphenyl, hydrogenated:

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
GLP: no  
Assessment: The substance or mixture has no acute dermal toxicity

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.

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Irritating to skin.

Terphenyl, hydrogenated:

Species: Rabbit

Exposure time: 24 h

Method: Other guidelines

Result: No skin irritation

### Serious eye damage/eye irritation

#### Components:

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

Species: Rabbit

Assessment: Irritating to eyes.

Method: OECD Test Guideline 405

Result: Irritating to eyes.

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:

Species: Rabbit  
Method: OECD Test Guideline 405  
Result: No eye irritation

Terphenyl, hydrogenated:

Species: Rabbit  
Method: Draize Test  
Result: No eye irritation  
GLP: no

### 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 sensitiser, sub-category 1B.

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

Terphenyl, hydrogenated:

Exposure routes: Skin

Species: Humans

Method: Patch Test 24 Hrs.

Result: Does not cause skin sensitisation.

#### Components:

Terphenyl, hydrogenated:

Assessment: Does not cause skin sensitisation.

### 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

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Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)  
Result: negative

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-(2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane

:  
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: positive

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

Terphenyl, hydrogenated:  
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 482  
Result: negative

: Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Result: negative

: Metabolic activation: with and without metabolic activation  
Method: In vitro mammalian cell gene mutation test  
Result: negative

### Components:

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

Genotoxicity in vivo : Test Type: in vivo assay  
Test species: Mouse (male)  
Cell type: Germ  
Application Route: Oral  
Dose: 3333, 10000 mg/kg  
Result: negative

Test Type: gene mutation test  
Test species: Rat (male)

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Cell type: Somatic  
Application Route: Oral  
Dose: 50,250,500,1000 mg/kg bw/day  
Method: OECD Test Guideline 488  
Result: negative

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:  
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

Terphenyl, hydrogenated:  
Genotoxicity in vivo : Test species: Rat  
Cell type: Bone marrow  
Dose: 250, 1250, 2500 mg/kg bw  
Method: OECD Test Guideline 475  
Result: negative

Germ cell mutagenicity-  
Assessment : No data available

### 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  
No observed adverse effect level: 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

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Frequency of Treatment: 3 days/week  
No-observed-effect level: 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  
No-observed-effect level: 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  
No observed adverse effect level: 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  
No-observed-effect level: 2 mg/kg bw/day  
Method: OECD Test Guideline 453  
Result: negative  
Target Organs: Digestive organs

Carcinogenicity - Assessment : No data available

### 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

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development were detected.

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:

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

Terphenyl, hydrogenated:

Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: No observed adverse effect level: 1,000 ppm  
General Toxicity F1: No observed adverse effect level: 1,000 ppm  
Method: OECD Test Guideline 416  
Result: Animal testing did not show any effects on fertility.  
GLP: yes

### 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: 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



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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

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-(2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane

:

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

Terphenyl, hydrogenated:

Species: Rat, female  
Application Route: Oral  
Dose: 125, 500, 1500 mg/kg bw/d  
Frequency of Treatment: 1 daily  
General Toxicity Maternal: No observed adverse effect level:  
125 mg/kg body weight  
Embryo-foetal toxicity: No observed adverse effect level: 500  
mg/kg body weight  
Method: OECD Test Guideline 414  
GLP: yes

### Components:

Terphenyl, hydrogenated:  
Reproductive toxicity -  
Assessment

: No evidence of adverse effects on sexual function and fertility,  
or on development, based on animal experiments.

### **STOT - single exposure**

No data available

### **STOT - repeated exposure**

No data available

### **Repeated dose toxicity**

#### Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:  
Species: Rat, male and female  
NOAEL: 50 mg/kg  
Application Route: oral (gavage)  
Exposure time: 14 Weeks Number of exposures: 7 d  
Dose: 0, 50, 250, 1000 mg/kg/day

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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

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:

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

Terphenyl, hydrogenated:  
Species: Rat, male and female  
NOAEL: 12 mg/kg  
LOAEL: 120 mg/kg  
Application Route: oral (feed)  
Exposure time: 14 weeks Number of exposures: 7 days/week  
Method: OECD Test Guideline 408

Species: Rat, male and female  
NOAEL: 0.1 mg/l  
LOAEL: 0.5 mg/l  
Application Route: Inhalation  
Exposure time: 90 days Number of exposures: 6 hours/day, 5 days/week (67 n  
Dose: 0, 10, 100, 500 mg/m<sup>3</sup>  
Method: OECD Test Guideline 413

Species: Rabbit, male and female  
NOAEL: 2,000 mg/kg  
Application Route: Dermal  
Exposure time: 21 days Number of exposures: 6 hours/day, 5 days/week  
Dose: 125, 500, 2000 mg/kg bw/d  
Method: Subacute toxicity  
Target Organs: Skin

### **Components:**

Terphenyl, hydrogenated:  
Repeated dose toxicity - Assessment : No adverse effect has been observed in chronic toxicity tests.

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### Aspiration toxicity

No data available

## 11.2 Information on other hazards

### Endocrine disrupting properties

#### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 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

### 12.1 Toxicity

#### Components:

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

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- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- 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
- 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  
Method: EPA-660/3-75-009
- Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.3 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211
- Ecotoxicology Assessment  
Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.
- Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-(2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane  
:
- Toxicity to fish : LC50 (Fish): 2.54 mg/l  
Exposure time: 96 h  
Method: Calculation method
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.55 mg/l  
Exposure time: 48 h  
Method: Calculation method
- 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  
Method: OECD Test Guideline 201

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- Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.3 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
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.
- Terphenyl, hydrogenated:  
Toxicity to fish : LC50 : > 100 mg/l  
Exposure time: 96 h
- Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 56 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : NOEC (activated sludge): 103 mg/l  
Exposure time: 3 h  
Test Type: static test  
Method: OECD Test Guideline 209  
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR: < 1 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Test Type: semi-static test  
Method: OECD Test Guideline 211  
GLP: yes
- Ecotoxicology Assessment  
Acute aquatic toxicity : This product has no known ecotoxicological effects.
- Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

### 12.2 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

- Stability in water : Degradation half life (DT50): 4.83 d (25 °C)  
pH: 4

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Method: OECD Test Guideline 111

Remarks: Fresh water

Degradation half life (DT50): 7.1 d (25 °C)

pH: 9

Method: OECD Test Guideline 111

Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C)

pH: 7

Method: OECD Test Guideline 111

Remarks: Fresh water

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:

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.

### 12.3 Bioaccumulative potential

#### Components:

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

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

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

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane

:

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 150  
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 2.7 - 3.6  
Method: OECD Test Guideline 117

Terphenyl, hydrogenated:  
Partition coefficient: n-octanol/water : log Pow: 6.5

### 12.4 Mobility in soil

#### Components:

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

Distribution among : Koc: 445

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environmental compartments

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane

:

Distribution among environmental compartments : Koc: 4460  
Method: OECD Test Guideline 121

### 12.5 Results of PBT and vPvB assessment

#### Product:

Assessment : This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB)..

### 12.6 Endocrine disrupting properties

#### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

#### Product:

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

---

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : 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

IATA

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**14.1 UN number or ID number** : UN 3082

**14.2 UN proper shipping name** : Environmentally hazardous substance, liquid, n.o.s.  
(BISPHENOL A EPOXY RESIN)

**14.3 Transport hazard class(es)** : 9

**14.4 Packing group** : III

Labels : Miscellaneous

Packing instruction (cargo aircraft) : 964

Packing instruction (passenger aircraft) : 964

**IATA (Passenger)**  
Environmentally hazardous : yes

**IATA (Cargo)**  
Environmentally hazardous : yes

**IMDG**

**14.1 UN number or ID number** : UN 3082

**14.2 UN proper shipping name** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN)

**14.3 Transport hazard class(es)** : 9

**14.4 Packing group** : III

Labels : 9

EmS Code : F-A, S-F

**14.5 Environmental hazards**  
Marine pollutant : yes

**ADR**

**14.1 UN number or ID number** : UN 3082

**14.2 UN proper shipping name** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN)

**14.3 Transport hazard class(es)** : 9

**14.4 Packing group** : III

Labels : 9

**14.5 Environmental hazards**  
Environmentally hazardous : yes

**RID**

**14.1 UN number or ID number** : UN 3082

**14.2 UN proper shipping name** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN)

**14.3 Transport hazard** : 9



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### class(es)

**14.4 Packing group** : III

Labels : 9

### 14.5 Environmental hazards

Environmentally hazardous : yes

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Terphenyl, hydrogenated

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

E2 ENVIRONMENTAL HAZARDS

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

### 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 : Not in compliance with the inventory

ENCS : Not in compliance with the inventory

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

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

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

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

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TSCA : All substances listed as active on the TSCA inventory

### Inventories

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

### 15.2 Chemical safety assessment

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

## SECTION 16: Other information

### Full text of H-Statements

H315 : Causes skin irritation.  
H317 : May cause an allergic skin reaction.  
H319 : Causes serious eye irritation.  
H411 : Toxic to aquatic life with long lasting effects.  
H413 : May cause long lasting harmful effects to aquatic life.

### Full text of other abbreviations

Aquatic Chronic : Long-term (chronic) aquatic hazard  
Eye Irrit. : Eye irritation  
Skin Irrit. : Skin irritation  
Skin Sens. : Skin sensitisation  
2017/164/EU : Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values  
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits  
2017/164/EU / STEL : Short term exposure limit  
2017/164/EU / TWA : Limit Value - eight hours  
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)  
GB EH40 / STEL : Short-term exposure limit (15-minute reference period)

### Further information

#### Classification of the mixture:

|                   |      |
|-------------------|------|
| Skin Irrit. 2     | H315 |
| Eye Irrit. 2      | H319 |
| Skin Sens. 1      | H317 |
| Aquatic Chronic 2 | H411 |

#### Classification procedure:

|                    |
|--------------------|
| Calculation method |
| Calculation method |
| Calculation method |
| Calculation method |

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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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## ARALDITE® CRYSTAL RESIN

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
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