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

### 1.1 Product identifier

Trade name : ARALDITE® 2011 GB HARDENER

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

Use of the Substance/Mixture : Hardener

### 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 corrosion, Sub-category 1C | H314: Causes severe skin burns and eye damage. |
| Serious eye damage, Category 1 | H318: Causes serious eye damage. |
| Skin sensitisation, Category 1 | H317: May cause an allergic skin reaction. |

### 2.2 Label elements

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

Hazard pictograms :

Signal word : Danger

Hazard statements :

| | |
|---|---|
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |

Precautionary statements :

**Prevention:**

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

Hazardous components which must be listed on the label:
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine

Amines, polyethylenepoly-, triethylenetetramine fraction

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) 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 (% w/w) |
|---|---|---|---|
| N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine | 10563-29-8<br>234-148-4 | Acute Tox. 4; H302<br>Skin Corr. 1A; H314 | >= 5 - < 9.65 |

| | | | |
|---|---|---|---|
| | 01-2119970376-29 | Skin Sens. 1B; H317 | |
| Amines, polyethylenepoly-, triethylenetetramine fraction | 90640-67-8<br>292-588-2<br>01-2119487919-13 | Acute Tox. 4; H302<br>Acute Tox. 4; H312<br>Skin Corr. 1B; H314<br>Eye Dam. 1; H318<br>Skin Sens. 1; H317<br>Aquatic Chronic 3; H412 | >= 3 - < 5 |

For explanation of abbreviations see section 16.

## SECTION 4: First aid measures

### 4.1 Description of 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.

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

Unsuitable extinguishing media : High volume water jet

### 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.

Hazardous combustion products : No hazardous combustion products are known

### 5.3 Advice for firefighters

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

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.

## SECTION 6: Accidental release measures

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

Personal precautions : Use personal protective equipment.

### 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

See Section 1 for emergency contact information.
For personal protection see section 8.

For disposal considerations see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

| | | |
|---|---|---|
| Advice on safe handling | : | Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>To avoid spills during handling keep bottle on a metal tray.<br>Dispose of rinse water in accordance with local and national regulations.<br>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. |
| 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.<br>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. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. |
| Storage class (TRGS 510) | : | 8A, Combustible, corrosive hazardous materials |
| Recommended storage temperature | : | 2 - 40 °C |
| Further information on storage stability | : | No decomposition if stored and applied as directed. |

### 7.3 Specific end use(s)

| | | |
|---|---|---|
| Specific use(s) | : | No data available |

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

| Substance name | End Use | Exposure routes | Potential health effects | Value |
|---|---|---|---|---|
| N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine | Workers | Inhalation | Long-term systemic effects | 3.7 mg/m3 |
| | Workers | Inhalation | Acute systemic effects | 7.5 mg/m3 |
| | Workers | Inhalation | Long-term local effects | 3.7 mg/m3 |
| | Workers | Inhalation | Acute local effects | 7.5 mg/m3 |
| | Workers | Dermal | Long-term systemic effects | 0.67 mg/kg |
| | Consumers | Inhalation | Long-term systemic effects | 0.65 mg/m3 |
| | Consumers | Inhalation | Long-term local effects | 0.65 mg/m3 |
| | Consumers | Oral | Long-term systemic effects | 0.2 mg/kg |
| Amines, polyethylenepoly-, triethylenetetramine fraction | Workers | Inhalation | Acute systemic effects | 5380 mg/m3 |
| | Workers | Dermal | Long-term systemic effects | 0.57 mg/kg |
| | Workers | Inhalation | Long-term systemic effects | 1 mg/m3 |
| | Workers | Dermal | Long-term local effects | 0.028 mg/m3 |
| | Consumers | Dermal | Acute systemic effects | 8 mg/kg |
| | Consumers | Inhalation | Acute systemic effects | 1600 mg/m3 |
| | Consumers | Oral | Acute systemic effects | 20 mg/kg |
| | Consumers | Dermal | Acute local effects | 1 mg/cm2 |
| | Consumers | Dermal | Acute local effects | 0.25 mg/kg |
| | Consumers | Inhalation | Long-term systemic effects | 0.29 mg/m3 |
| | Consumers | Oral | Long-term systemic effects | 0.41 mg/kg |
| | Consumers | Dermal | Long-term local effects | 0.43 mg/cm2 |

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

| Substance name | Environmental Compartment | Value |
|---|---|---|
| N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine | Fresh water | 9.2 µg/l |
| Remarks: | Assessment Factors | |
| | Marine water | 0.92 µg/l |

| | | |
|---|---|---|
| | Assessment Factors | |
| | Freshwater - intermittent | 92 µg/l |
| | Assessment Factors | |
| | Sewage treatment plant | 18.1 mg/l |
| | Assessment Factors | |
| | Fresh water sediment | 0.0336 mg/kg |
| | Equilibrium method | |
| | Marine sediment | 0.00336 mg/kg |
| | Equilibrium method | |
| | Soil | 0.00132 mg/kg |
| | Equilibrium method | |
| Amines, polyethylenepoly-, triethylenetetramine fraction | Fresh water | 190 µg/l |
| | Assessment Factors | |
| | Fresh water sediment | 95.9 mg/kg |
| | Equilibrium method | |
| | Marine water | 38 µg/l |
| | Assessment Factors | |
| | Freshwater - intermittent | 200 µg/l |
| | Assessment Factors | |
| | Marine sediment | 19.2 mg/kg |
| | Equilibrium method | |
| | Soil | 19.1 mg/kg |
| | Equilibrium method | |
| | Sewage treatment plant | 4.25 mg/l |
| | Assessment Factors | |
| | Secondary Poisoning | 0.18 mg/kg |
| | Assessment Factors | |

**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
Material : butyl-rubber
Break through time : > 8 h

| | | |
|---|---|---|
| Material | : | Solvent-resistant gloves (butyl-rubber) |
| Material | : | Nitrile rubber |
| Break through time | : | 10 - 480 min |
| Remarks | : | The suitability for a specific workplace should be discussed with the producers of the protective gloves. |
| Skin and body protection | : | Impervious clothing<br>Choose body protection according to the amount and concentration of the dangerous substance at the work place. |
| Respiratory protection | : | Wear respiratory protection when its use is identified for certain contributing scenario. |

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | liquid |
| Colour | : | light yellow |
| Odour | : | slight |
| Odour Threshold | : | No data is available on the product itself. |
| pH | : | No data is available on the product itself. |
| Melting point | : | No data available |
| Boiling point | : | > 200 °C |
| Flash point | : | 110 °C<br>Method: Pensky-Martens closed cup |
| Evaporation rate | : | No data is available on the product itself. |
| Flammability (solid, gas) | : | No data is available on the product itself. |
| Burning rate | : | 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 | : | 0.04 hPa (20 °C) |
| Relative vapour density | : | No data is available on the product itself. |

| | | |
|---|---|---|
| Relative density | : | No data is available on the product itself. |
| Density | : | 0.95 g/cm3 (25 °C) |
| 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 | : | 20,000 - 35,000 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**

| | | |
|---|---|---|
| Molecular weight | : | No data available |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

Not classified as a reactivity hazard.

**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 | : | No data available |

**10.5 Incompatible materials**

| | | |
|---|---|---|
| Materials to avoid | : | Strong acids<br>Strong bases<br>Strong oxidizing agents |

### 10.6 Hazardous decomposition products

Carbon oxides
Nitrogen oxides (NOx)
Burning produces noxious and toxic fumes.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute toxicity**

| | | |
|---|---|---|
| Acute oral toxicity - Product | : | Acute toxicity estimate : > 2,000 mg/kg<br>Method: Calculation method |
| Acute inhalation toxicity | : | No data available |
| Acute dermal toxicity - Product | : | Acute toxicity estimate : > 2,000 mg/kg<br>Method: Calculation method |
| Acute toxicity (other routes of administration) | : | No data available |

**Skin corrosion/irritation**

**Product:**

Result: Corrosive after 1 to 4 hours of exposure

**Serious eye damage/eye irritation**

**Product:**

Species: Rabbit
Assessment: Corrosive
Result: Corrosive

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation**

**Product:**

Remarks: Causes sensitisation.

Assessment: No data available

**Germ cell mutagenicity**

**Components:**

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

| | | |
|---|---|---|
| Genotoxicity in vitro | : | Metabolic activation: with and without metabolic activation<br>Method: OECD Test Guideline 487<br>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

Amines, polyethylenepoly-, triethylenetetramine fraction**:**
Genotoxicity in vitro : Concentration: 0 - 200 µg/L
Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

**Components:**

Amines, polyethylenepoly-, triethylenetetramine fraction**:**
Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

**Carcinogenicity**

**Components:**

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

Amines, polyethylenepoly-, triethylenetetramine fraction**:**
Species: Mouse, male
Application Route: Dermal
Dose: 42 mg/kg
Frequency of Treatment: 3 daily
Method: OECD Test Guideline 451
Result: negative

Carcinogenicity - Assessment : No data available

**Reproductive toxicity**

**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine**:**
Effects on fertility : Species: Rat, male and female

Application Route: Oral
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.

**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.

Amines, polyethylenepoly-, triethylenetetramine fraction**:**

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

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

**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.

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity**

**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine**:**
Species: Rat, male and female
: 550
Application Route: Ingestion

Test atmosphere: vapour
Exposure time: 3 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Species: Mouse, male
NOAEL: >= 56.3
Application Route: Skin contact
Exposure time: 20 hNumber of exposures: 3 d
Method: Chronic toxicity

Amines, polyethylenepoly-, triethylenetetramine fraction**:**
Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: Ingestion
Exposure time: 26 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Repeated dose toxicity - Assessment : No data available

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information**

**Product:**

Remarks: No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

**Components:**

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

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 9.2 mg/l<br>Exposure time: 48 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 202 |
| Toxicity to algae | : | ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 201 |
| Toxicity to microorganisms | : | EC50 (Pseudomonas putida): 181 mg/l<br>Exposure time: 16 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: DIN 38 412 Part 8 |

Amines, polyethylenepoly-, triethylenetetramine fraction**:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Pimephales promelas (fathead minnow)): 330 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: EPA OTS 797.1400 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 31.1 mg/l<br>Exposure time: 48 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: Directive 67/548/EEC, Annex V, C.2. |
| Toxicity to algae | : | ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l<br>Exposure time: 72 h<br>Test Type: semi-static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 201 |
| Toxicity to microorganisms | : | EC50 (activated sludge): 800 mg/l |

Exposure time: 0.5 h
Test Type: static test
Test substance: Fresh water

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

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

### 12.2 Persistence and degradability

**Components:**

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

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

Amines, polyethylenepoly-, triethylenetetramine fraction**:**

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
Method: OECD Test Guideline 302 A

### 12.3 Bioaccumulative potential

**Components:**

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

Amines, polyethylenepoly-, triethylenetetramine fraction**:**

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

### 12.4 Mobility in soil

**Components:**

Amines, polyethylenepoly-, triethylenetetramine fraction**:**

| | | |
|---|---|---|
| Distribution among environmental compartments | : | Koc: 1584.9 - 5012<br>Method: OECD Test Guideline 106 |

### 12.5 Results of PBT and vPvB assessment

**Product:**

| | | |
|---|---|---|
| Assessment | : | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.. |

### 12.6 Other adverse effects

**Product:**

| | | |
|---|---|---|
| Additional ecological information | : | No data available |

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

| | | |
|---|---|---|
| Product | : | Do not dispose of waste into sewer.<br>Do not contaminate ponds, waterways or ditches with chemical or used container.<br>Send to a licensed waste management company. |
| Contaminated packaging | : | Empty remaining contents.<br>Dispose of as unused product.<br>Do not re-use empty containers. |

## SECTION 14: Transport information

**IATA**

| | | |
|---|---|---|
| **14.1 UN number** | : | UN 2735 |
| **14.2 UN proper shipping name** | : | Polyamines, liquid, corrosive, n.o.s.<br>(DIMETHYL DIPROPYL TRIAMINE) |
| **14.3 Transport hazard class(es)** | : | 8 |
| **14.4 Packing group** | : | III |
| Labels | : | Corrosive |
| Packing instruction (cargo aircraft) | : | 856 |
| Packing instruction (passenger aircraft) | : | 852 |

**IMDG**

| | | |
|---|---|---|
| **14.1 UN number** | : | UN 2735 |
| **14.2 UN proper shipping name** | : | POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE) |
| **14.3 Transport hazard class(es)** | : | 8 |
| **14.4 Packing group** | : | III |
| Labels | : | 8 |
| EmS Code | : | F-A, S-B |
| **14.5 Environmental hazards** | | |
| Marine pollutant | : | no |

**ADR**

| | | |
|---|---|---|
| **14.1 UN number** | : | UN 2735 |
| **14.2 UN proper shipping name** | : | POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE) |
| **14.3 Transport hazard class(es)** | : | 8 |
| **14.4 Packing group** | : | III |
| Labels | : | 8 |
| **14.5 Environmental hazards** | | |
| Environmentally hazardous | : | no |

**RID**

| | | |
|---|---|---|
| **14.1 UN number** | : | UN 2735 |
| **14.2 UN proper shipping name** | : | POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE) |
| **14.3 Transport hazard class(es)** | : | 8 |
| **14.4 Packing group** | : | III |
| Labels | : | 8 |
| **14.5 Environmental hazards** | | |
| Environmentally hazardous | : | no |

**Transport in bulk according to Annex II of Marpol and the IBC Code**

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 - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) | : | Not applicable |
| REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). | : | This product does not contain substances of very high concern |

(Regulation (EC) No 1907/2006 (REACH), Article 57).

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

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

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 : This product contains one or several components listed in the Canadian NDSL.

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

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

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

KECI : 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), 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**

| | | |
|---|---|---|
| H302 | : | Harmful if swallowed. |
| H312 | : | Harmful in contact with skin. |
| H314 | : | Causes severe skin burns and eye damage. |
| H317 | : | May cause an allergic skin reaction. |
| H318 | : | Causes serious eye damage. |
| H412 | : | Harmful to aquatic life with long lasting effects. |

**Full text of other abbreviations**

| | | |
|---|---|---|
| Acute Tox. | : | Acute toxicity |
| Aquatic Chronic | : | Chronic aquatic toxicity |
| Eye Dam. | : | Serious eye damage |
| Skin Corr. | : | Skin corrosion |
| Skin Sens. | : | Skin sensitisation |

**Further information**

| **Classification of the mixture:** | | **Classification procedure:** |
|---|---|---|
| Skin Corr. 1C | H314 | Based on product data or assessment |
| Eye Dam. 1 | H318 | Based on product data or assessment |
| Skin Sens. 1 | H317 | Calculation method |

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

### 1.1 Product identifier

Trade name : ARALDITE® 2011 GB RESIN

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

Use of the Substance/Mixture : Adhesives

### 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. |
| Chronic aquatic toxicity, Category 2 | H411: Toxic to aquatic life with long lasting effects. |

### 2.2 Label elements

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

Hazard pictograms :

Signal word : Warning

Hazard statements :

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

Precautionary statements :

**Prevention:**

| | |
|---|---|
| P261 | Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. |
| 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. |
| P337 + P313 | If eye irritation persists: Get medical advice/ attention. |
| P362 + P364 | Take off contaminated clothing and wash it before reuse. |

Hazardous components which must be listed on the label:
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane

bisphenol A - epoxy resins, number average MW >700 - <1100

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

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) 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 (% w/w) |
|---|---|---|---|
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane | 25068-38-6<br>500-033-5<br>01-2119456619-26 | Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Skin Sens. 1; H317<br>Aquatic Chronic 2; H411 | >= 70 - < 90 |

| | | | |
|---|---|---|---|
| bisphenol A - epoxy resins, number average MW >700 - <1100 | 25068-38-6<br>Polymer | Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Skin Sens. 1; H317 | >= 1 - < 10 |
| Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol | 9003-36-5<br>500-006-8<br>01-2119454392-40 | Skin Irrit. 2; H315<br>Skin Sens. 1; H317<br>Aquatic Chronic 2; H411 | >= 2.5 - < 10 |

For explanation of abbreviations see section 16.

## 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.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

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

Unsuitable extinguishing : High volume water jet

media

### 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. |
| Hazardous combustion products | : | No hazardous combustion products are known |

### 5.3 Advice for firefighters

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

## SECTION 6: Accidental release measures

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

| | | |
|---|---|---|
| Personal precautions | : | Use personal protective equipment. |

### 6.2 Environmental precautions

| | | |
|---|---|---|
| Environmental precautions | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>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).<br>Keep in suitable, closed containers for disposal. |

### 6.4 Reference to other sections

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

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

| | | |
|---|---|---|
| Advice on safe handling | : | Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>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.

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. Electrical installations / working materials must comply with the technological safety standards.

Recommended storage temperature : 2 - 40 °C

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

### 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 |
|---|---|---|---|---|
| Silicon dioxide | 7631-86-9 | TWA (inhalable dust) | 6 mg/m3 (Silica) | GB EH40 |
| Further information | For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed | | | |

| | | | | |
|---|---|---|---|---|
| | above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'., Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used | | | |
| | | TWA (Respirable dust) | 2.4 mg/m3 (Silica) | GB EH40 |
| Further information | For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'., Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used | | | |

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

| Substance name | End Use | Exposure routes | Potential health effects | Value |
|---|---|---|---|---|
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane | Workers | Dermal | Systemic effects, Short-term exposure | 8.33 mg/kg bw/day |
| | Workers | Inhalation | Systemic effects, Short-term exposure | 12.25 mg/m3 |
| | Workers | Dermal | Systemic effects, Long-term exposure | 8.33 mg/kg |

| | | | | |
|---|---|---|---|---|
| | | | | bw/day |
| | Workers | Inhalation | Systemic effects, Long-term exposure | 12.25 mg/m3 |
| | Consumers | Dermal | Systemic effects, Short-term exposure | 3.571 mg/kg bw/day |
| | Consumers | Oral | Systemic effects, Short-term exposure | 0.75 mg/kg bw/day |
| | Consumers | Dermal | Systemic effects, Long-term exposure | 3.571 mg/kg bw/day |
| | Consumers | Oral | Systemic effects, Long-term exposure | 0.75 mg/kg bw/day |
| Bis(2-ethylhexyl) adipate | Workers | Inhalation | Long-term systemic effects | 17.8 mg/m3 |
| | Workers | Inhalation | Systemic effects | 17.8 mg/m3 |
| | Consumers | Inhalation | Long-term systemic effects | 4.4 mg/m3 |
| | Consumers | Inhalation | Systemic effects | 4.4 mg/m3 |
| | Workers | Dermal | Long-term systemic effects | 25.5 mg/kg |
| | Consumers | Dermal | Long-term systemic effects | 13 mg/kg |
| | Consumers | Oral | Long-term systemic effects | 1.3 mg/kg |
| Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol | Workers | Dermal | Acute local effects | 0.0083 mg/cm2 |
| | Workers | Dermal | Long-term systemic effects | 104.15 mg/kg |
| | Workers | Inhalation | Long-term systemic effects | 29.39 mg/m3 |
| | Consumers | Dermal | Long-term systemic effects | 62.5 mg/kg |
| | Consumers | Inhalation | Long-term systemic effects | 8.7 mg/m3 |
| | Consumers | Oral | Long-term systemic effects | 6.25 mg/kg |
| Silicon dioxide | Workers | Inhalation | Long-term systemic effects | 4 mg/m3 |
| | Workers | Inhalation | Systemic effects | 4 mg/m3 |

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

| Substance name | Environmental Compartment | Value |
|---|---|---|
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane | Fresh water | 0.006 mg/l |

| | | |
|---|---|---|
| Remarks: | Assessment Factors | |
| | Marine water | 0.0006 mg/l |
| | Assessment Factors | |
| | Freshwater - intermittent | 0.018 mg/l |
| | Assessment Factors | |
| | Fresh water sediment | 0.996 mg/kg |
| | Equilibrium method | |
| | Marine sediment | 0.0996 mg/kg |
| | Equilibrium method | |
| | Soil | 0.196 mg/kg |
| | Equilibrium method | |
| | Sewage treatment plant | 10 mg/l |
| | Assessment Factors | |
| | Secondary Poisoning | 11 mg/kg |
| Bis(2-ethylhexyl) adipate | Fresh water | 0.0032 mg/l |
| | Marine water | 0.0032 mg/l |
| | Sewage treatment plant | 35 mg/l |
| | Assessment Factors | |
| | Freshwater - intermittent | 0.0032 mg/l |
| | Fresh water sediment | 15.6 mg/kg |
| | Equilibrium method | |
| | Marine sediment | 17 mg/kg |
| | Equilibrium method | |
| Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol | Fresh water | 0.003 mg/l |
| | Assessment Factors | |
| | Marine water | 0.0003 mg/l |
| | Assessment Factors | |
| | Intermittent use/release | 0.0254 mg/l |
| | Assessment Factors | |
| | Fresh water sediment | 0.294 mg/kg |
| | Equilibrium method | |
| | Marine sediment | 0.0294 mg/kg |
| | Equilibrium method | |

| | | |
|---|---|---|
| | Soil | 0.237 mg/kg |
| | Equilibrium method | |
| | Sewage treatment plant | 10 mg/l |
| | Assessment Factors | |

### 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
Material : butyl-rubber
Break through time : > 8 h

Material : Solvent-resistant gloves (butyl-rubber)

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

Material : Neoprene gloves

Remarks : 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 : No personal respiratory protective equipment normally required.
In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance : paste

Colour : natural colour

Odour : slight

Odour Threshold : No data is available on the product itself.

pH : ca. 6 (20 °C)
Concentration: 500 g/l

| | | |
|---|---|---|
| Melting point/freezing point | : | No data available |
| Boiling point | : | > 200 °C |
| Flash point | : | 210 °C<br>Method: Pensky-Martens closed cup, 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. |
| 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 | : | < 0.001 hPa (20 °C) |
| 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/cm3 (25 °C) |
| 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 | : | 30,000 - 50,000 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**

| | | |
|---|---|---|
| Molecular weight | : | No data available |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Not classified as a reactivity hazard.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.
No hazards to be specially mentioned.

### 10.4 Conditions to avoid

Conditions to avoid : No data available

### 10.5 Incompatible materials

Materials to avoid : Strong acids
Strong bases
Strong oxidizing agents

### 10.6 Hazardous decomposition products

Carbon oxides
Burning produces noxious and toxic fumes.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute toxicity**

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**
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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
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

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol**:**
Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401

**Components:**

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

Acute inhalation toxicity : LC0 (Rat, male): 10 ppt
Exposure time: 5 h
Test atmosphere: vapour

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

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

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

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

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

**Skin corrosion/irritation**

**Product:**

Remarks: May cause skin irritation and/or dermatitis.

**Serious eye damage/eye irritation**

**Product:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitisation**

**Product:**

Remarks: Causes sensitisation.

Assessment: No data available

**Germ cell mutagenicity**

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

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

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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

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

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

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: positive

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

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
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

**Components:**

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Germ cell mutagenicity-Assessment : Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-Assessment : No data available

**Carcinogenicity**

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**
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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Species: Rat, male and female
Application Route: Oral
Exposure time: 24 month(s)
Dose: 15 mg/kg
Frequency of Treatment: 7 daily
Method: OECD Test Guideline 453
Result: negative

Species: Mouse, male
Application Route: Dermal
Exposure time: 24 month(s)
Dose: .1 mg/kg
Frequency of Treatment: 3 daily
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 daily
Method: OECD Test Guideline 453
Result: negative

**Components:**

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

**Reproductive toxicity**

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

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.

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Species: Rat, male and female
Application Route: Oral
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.

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

Effects on foetal development : Species: Rabbit, female
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Species: Rabbit, female
Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

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

**Components:**

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

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:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**
Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: Ingestion
Exposure time: 14 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOEL: 10 mg/kg
Application Route: Skin contact
Exposure time: 13 WeeksNumber of exposures: 5 d

Method: Subchronic toxicity

Species: Mouse, male
NOAEL: 100 mg/kg
Application Route: Skin contact
Exposure time: 13 WeeksNumber of exposures: 3 d
Method: Subchronic toxicity

bisphenol A - epoxy resins, number average MW >700 - <1100**:**
Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: Ingestion
Exposure time: 14 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOEL: 10 mg/kg
Application Route: Skin contact
Exposure time: 13 WeeksNumber of exposures: 5 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 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Repeated dose toxicity - Assessment : No data available

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**
No data available

**Neurological effects**
No data available

**Further information**

**Product:**
Remarks: No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 2.7 mg/l<br>Exposure time: 48 h<br>Test Type: static test<br>Test substance: Fresh water |
| Toxicity to algae | : | EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Test substance: Fresh water<br>Method: EPA-660/3-75-009 |
| Toxicity to microorganisms | : | IC50 (activated sludge): > 100 mg/l<br>Exposure time: 3 h<br>Test Type: static test<br>Test substance: Fresh water |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 0.3 mg/l<br>Exposure time: 21 d<br>Species: Daphnia magna (Water flea)<br>Test Type: semi-static test<br>Test substance: Fresh water<br>Method: OECD Test Guideline 211 |

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

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): 0.55 mg/l<br>Exposure time: 96 h<br>Test Type: semi-static test |

Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.6 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae : 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

M-Factor (Acute aquatic toxicity) : 1

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

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

### 12.2 Persistence and degradability

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

Biodegradability : Inoculum: Sewage (STP effluent)
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
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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

Biodegradability : Inoculum: Sewage (STP effluent)
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
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

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

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

### 12.3 Bioaccumulative potential

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

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

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

Bioaccumulation : Species: Fish
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.

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

### 12.4 Mobility in soil

**Components:**

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane**:**

Distribution among environmental compartments : Koc: 445

bisphenol A - epoxy resins, number average MW >700 - <1100**:**

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

### 12.5 Results of PBT and vPvB assessment

**Product:**

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

### 12.6 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.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

Do not re-use empty containers.

## SECTION 14: Transport information

**IATA**

| | | |
|---|---|---|
| **14.1 UN number** | : | UN 3082 |
| **14.2 UN proper shipping name** | : | Environmentally hazardous substance, liquid, n.o.s.<br>(BISPHENOL A EPOXY RESIN, BISPHENOL F 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** | : | UN 3082 |
| **14.2 UN proper shipping name** | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN, BISPHENOL F 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** | : | UN 3082 |
| **14.2 UN proper shipping name** | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(BISPHENOL A EPOXY RESIN, BISPHENOL F 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** | : | UN 3082 |
| **14.2 UN proper shipping name** | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN) |
| **14.3 Transport hazard class(es)** | : | 9 |
| **14.4 Packing group** | : | III |
| Labels | : | 9 |
| **14.5 Environmental hazards** | | |
| Environmentally hazardous | : | yes |

**Transport in bulk according to Annex II of Marpol and the IBC Code**

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 - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) | : | Not applicable |
| REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). | : | This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57). |
| REACH - List of substances subject to authorisation (Annex XIV) | : | Not applicable |
| REACH - List of substances subject to authorisation (Annex XIV) | : | Not applicable |

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 |
| AICS | : | On the inventory, or in compliance with the inventory |
| NZIoC | : | On the inventory, or in compliance with the inventory |
| ENCS | : | On the inventory, or in compliance with the inventory |

| | | |
|---|---|---|
| KECI | : | On the inventory, or in compliance with the inventory |
| PICCS | : | On the inventory, or in compliance with the inventory |
| IECSC | : | On the inventory, or in compliance with the inventory |
| TCSI | : | On the inventory, or in compliance with the inventory |
| TSCA | : | On the inventory, or in compliance with the inventory |

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), 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. |

**Full text of other abbreviations**

| | | |
|---|---|---|
| Aquatic Chronic | : | Chronic aquatic toxicity |
| Eye Irrit. | : | Eye irritation |
| Skin Irrit. | : | Skin irritation |
| Skin Sens. | : | Skin sensitisation |
| GB EH40 | : | UK. EH40 WEL - Workplace Exposure Limits |
| GB EH40 / TWA | : | Long-term exposure limit (8-hour TWA reference period) |

**Further information**

| **Classification of the mixture:** | | **Classification procedure:** |
|---|---|---|
| Skin Irrit. 2 | H315 | Calculation method |
| Eye Irrit. 2 | H319 | Calculation method |
| Skin Sens. 1 | H317 | Calculation method |
| Aquatic Chronic 2 | H411 | Calculation method |

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