

# SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

**HUNTSMAN**

Enriching lives through innovation

## ARALDITE® AV 144-2

Version	Revision Date:	SDS Number:	Date of last issue: 05.06.2018
1.4	08.10.2021	400001009962	Date of first issue: 27.05.2016

Print Date 10.05.2023

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

#### 1.1 Product identifier

Trade name : ARALDITE® AV 144-2

#### 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	:	<b>Prevention:</b> 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. <b>Response:</b> P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P391 Collect spillage.

Hazardous components which must be listed on the label:

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

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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.

### 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.

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. EC-No. Index-No.	Classification	Concentration (% w/w)

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	Registration number		
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol (BPFDE)	- -	Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Chronic 2; H411	>= 30 - < 50
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3 216-823-5 603-073-00-2	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411  specific concentration limit Skin Irrit. 2; H315 >= 5 % Eye Irrit. 2; H319 >= 5 %	>= 10 - < 20
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	68609-97-2 271-846-8 603-103-00-4	Skin Irrit. 2; H315 Skin Sens. 1; H317	>= 1 - < 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.
- If inhaled : If inhaled, remove to fresh air.  
Get medical attention if symptoms occur.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.

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

None known.

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### 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 : Carbon dioxide (CO<sub>2</sub>)  
Carbon monoxide  
Carbon oxides  
Halogenated compounds  
Metal oxides

### 5.3 Advice for firefighters

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

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.  
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,

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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 : Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- 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.
- Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.
- Recommended storage temperature : 2 - 40 °C
- Further information on storage stability : Stable under normal conditions.

### 7.3 Specific end use(s)

- Specific use(s) : No data available

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### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

##### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Not applicable				
Mica-group minerals ; Mica	12001-26-2	TWA (Inhalable)	10 mg/m3	GB EH40
		TWA (Respirable fraction)	0.8 mg/m3	GB EH40
Titanium dioxide	13463-67-7	TWA (inhalable dust)	10 mg/m3	GB EH40
		TWA (Respirable dust)	4 mg/m3	GB EH40
Barium sulfate	7727-43-7	TWA (inhalable dust)	10 mg/m3	GB EH40
		TWA (Respirable dust)	4 mg/m3	GB EH40

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

Substance name	End Use	Exposure routes	Potential health effects	Value
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
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Workers	Inhalation	Long-term systemic effects	4.93 mg/m3
	Workers	Dermal	Long-term systemic effects	0.75 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.87 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.0893 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0.5 mg/kg bw/day
oxirane, mono[(C12-14-alkyloxy)methyl]	Workers	Inhalation	Long-term systemic	3.6 mg/m3

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derivs.			effects	
	Workers	Dermal	Long-term systemic effects	1 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0.87 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.5 mg/kg
	Consumers	Oral	Long-term systemic effects	0.5 mg/kg
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Workers	Inhalation	Long-term systemic effects	4.93 mg/m3
	Workers	Dermal	Long-term systemic effects	0.75 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.87 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.0893 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0.5 mg/kg bw/day
Titanium dioxide	Workers	Inhalation	Long-term local effects	10 mg/m3
	Consumers	Oral	Long-term systemic effects	700 mg/kg bw/day
Barium sulfate	Workers	Inhalation	Long-term systemic effects	10 mg/m3
	Workers	Inhalation	Long-term local effects	10 mg/m3
	Consumer use	Inhalation	Long-term systemic effects	10 mg/m3
	Consumer use	Oral	Long-term systemic effects	13000 mg/kg
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol (BPFGE)	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 bw/day
	Consumers	Inhalation	Long-term systemic effects	8.7 mg/m3
	Consumers	Oral	Long-term systemic effects	6.25 mg/kg bw/day

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oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	Workers	Inhalation	Long-term systemic effects	3.6 mg/m3
	Workers	Dermal	Long-term systemic effects	1 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0.87 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.5 mg/kg
	Consumers	Oral	Long-term systemic effects	0.5 mg/kg

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

Substance name	Environmental Compartment	Value
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	Fresh water	0.003 mg/l
Remarks:	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	
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Fresh water	0.006 mg/l
	Marine water	0.001 mg/l
	Fresh water sediment	0.341 mg/kg dry weight (d.w.)
	Marine sediment	0.034 mg/kg dry weight (d.w.)
	Soil	0.065 mg/kg dry weight (d.w.)
	Sewage treatment plant	10 mg/l
	Secondary Poisoning	11 mg/kg
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	Fresh water	0.106 mg/l



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	Marine water	0.011 mg/l
	Freshwater - intermittent	0.072 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	307.16 mg/kg
	Marine sediment	30.72 mg/kg
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Fresh water	0.006 mg/l
	Marine water	0.001 mg/l
	Fresh water sediment	0.341 mg/kg dry weight (d.w.)
	Marine sediment	0.034 mg/kg dry weight (d.w.)
	Soil	0.065 mg/kg dry weight (d.w.)
	Sewage treatment plant	10 mg/l
	Secondary Poisoning	11 mg/kg
Titanium dioxide	Marine water	0.0184 mg/l
	Assessment Factors	
	Fresh water sediment	1000 mg/kg
	Assessment Factors	
	Fresh water	0.184 mg/l
	Assessment Factors	
	Marine sediment	100 mg/kg
	Assessment Factors	
	Soil	100 mg/kg
	Assessment Factors	
	Sewage treatment plant	100 mg/l
	Assessment Factors	
	Freshwater - intermittent	0.193 mg/l
	Assessment Factors	
Barium sulfate	Fresh water	115 µg/l
	Sewage treatment plant	62.2 mg/l
	Assessment Factors	
	Fresh water sediment	600.4 mg/kg
	Assessment Factors	
	Soil	207.7 mg/kg

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	Assessment Factors	
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol (BPFDE)	Fresh water	0.003 mg/l
	Assessment Factors	
	Marine water	0 mg/l
	Assessment Factors	
	Intermittent use/release	0.0254 mg/l
	Assessment Factors	
	Fresh water sediment	0.294 mg/kg dry weight (d.w.)
	Equilibrium method	
	Marine sediment	0.0294 mg/kg dry weight (d.w.)
	Equilibrium method	
	Soil	0.237 mg/kg dry weight (d.w.)
	Equilibrium method	
	Sewage treatment plant	10 mg/l
	Assessment Factors	
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	Fresh water	0.106 mg/l
	Marine water	0.011 mg/l
	Freshwater - intermittent	0.072 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	307.16 mg/kg
	Marine sediment	30.72 mg/kg
Siloxanes and Silicones, di-Me, reaction products with silica	Fresh water sediment	> 100 mg/kg
	Assessment Factors	
	Soil	23 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

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Material	:	butyl-rubber
Material	:	Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time	:	> 8 h
Material	:	Neoprene rubber
Material	:	Nitrile rubber
Break through time	:	10 - 480 min
Remarks	:	Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). 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.
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	:	paste
Colour	:	grey
Odour	:	slight
Odour Threshold	:	No data is available on the product itself.
pH	:	6 (25 °C) Concentration: 500 g/l
Melting point/freezing point	:	No data is available on the product itself.
Boiling point	:	> 200 °C
Flash point	:	180 °C Method: Pensky-Martens closed cup, closed cup
Flammability (solid, gas)	:	No data is available on the product itself.
Upper explosion limit / Upper flammability limit	:	No data is available on the product itself.

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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 : 1.4 g/cm<sup>3</sup> (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 : 380,000 - 720,000 mPa.s (25 °C)

## 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

Materials to avoid : None known.

### 10.6 Hazardous decomposition products

Hazardous decomposition products : carbon dioxide  
carbon monoxide  
Halogenated compounds

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### SECTION 11: Toxicological information

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

##### Acute toxicity

###### Components:

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

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

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.

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute oral toxicity : LD50 (Rat, male): ca. 26.8 g/kg  
Method: Other guidelines

###### Components:

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute inhalation toxicity : LC0 (Rat): > 0.15 mg/l  
Exposure time: 7 h  
Test atmosphere: vapour  
Method: Other guidelines

###### Components:

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

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

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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Acute dermal toxicity : (Rabbit, male): > 4,000 mg/kg, 4,5 ml/kg

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Assessment: The substance or mixture has no acute dermal toxicity

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

### Skin corrosion/irritation

#### Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: Irritating to skin.

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.

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rabbit

Exposure time: 24 h

Method: Acute dermal toxicity

Result: Irritating to skin.

### Serious eye damage/eye irritation

#### Components:

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

Species: Rabbit

Method: OECD Test Guideline 405

Result: No eye irritation

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

Species: Rabbit

Assessment: Irritating to eyes.

Method: OECD Test Guideline 405

Result: Irritating to eyes.

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rabbit

Assessment: No eye irritation

Method: OECD Test Guideline 405

Result: slight irritation

### Respiratory or skin sensitisation

#### Components:

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

Test Type: Local lymph node assay (LLNA)

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

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.

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Test Type: Buehler Test

Exposure routes: Skin

Species: Guinea pig

Method: OPPTS 870.2600

Result: May cause sensitisation by skin contact.

Assessment: No data available

### Germ cell mutagenicity

#### Components:

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

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

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

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Test system: mouse lymphoma cells  
Metabolic activation: without metabolic activation  
Result: positive

: Test Type: reverse mutation assay  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation

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Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)  
Result: negative

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Genotoxicity in vitro : Test Type: Ames test  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: positive

: Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Concentration: 0,5 - 5.000 µg/mL  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

### Components:

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

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

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



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Result: negative

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Genotoxicity in vivo : Test Type: In vivo micronucleus test  
Test species: Mouse (male and female)  
Cell type: Bone marrow  
Application Route: Intraperitoneal injection  
Exposure time: 24 hr, 48 hr, and 72 hr  
Method: OECD Test Guideline 474  
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  
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

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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:

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

Effects on fertility : Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Dose: 0, 50, 180, 540 or 750 mg/kg/  
Duration of Single Treatment: 238 d  
General Toxicity - Parent: No-observed-effect level: 750  
General Toxicity F1: No-observed-effect level: 750 mg/kg body weight  
General Toxicity F2: NOAEL: 750 mg/kg body weight  
Method: OECD Test Guideline 416  
Result: No effects on fertility and early embryonic development were detected.  
GLP: yes  
Remarks: Information given is based on data obtained from similar substances.

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

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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

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Species: Rat, male and female  
Application Route: Dermal  
Duration of Single Treatment: 13 Weeks  
Frequency of Treatment: 5 days/week  
General Toxicity - Parent: No observed adverse effect level:  
100 mg/kg body weight  
Method: OECD Test Guideline 411

### 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  
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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rat, female  
Application Route: Dermal  
Duration of Single Treatment: 6 h  
General Toxicity Maternal: No observed adverse effect level:  
200 mg/kg body weight

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

Species: Rabbit, female  
Application Route: Oral  
Dose: 40, 125, 375 milligram per kilogram  
General Toxicity Maternal: No observed adverse effect level:  
375 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level:  
375 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Reproductive toxicity - Assessment : No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

### Repeated dose toxicity

#### Components:

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

Species: Rat, male and female

NOAEL: 250 mg/kg

Application Route: Ingestion

Exposure time: 13 Weeks Number of exposures: 7 d

Method: Subchronic toxicity

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

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: oral (gavage)

Exposure time: 14 Weeks Number of exposures: 7 d

Dose: 0, 50, 250, 1000 mg/kg/day

Method: OECD Test Guideline 408

Species: Rat, male and female

NOAEL: >= 10 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks Number of exposures: 5 d

Dose: 0, 10, 100, 1000 mg/kg/day

Method: OECD Test Guideline 411

Species: Mouse, male

NOAEL: 100 mg/kg

Application Route: Skin contact

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Exposure time: 13 Weeks Number of exposures: 3 d  
Dose: 0, 1, 10, 100 mg/kg/day  
Method: OECD Test Guideline 411

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Species: Rat, male and female

NOEL: 1 mg/kg

LOAEL: 10 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks Number of exposures: 5 days/week for 13 weeks

Method: OECD Test Guideline 411

Repeated dose toxicity - Assessment : No data available

### 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

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### Further information

Ingestion: No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

#### Components:

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

- Toxicity to fish : LC50 (Fish): 2.54 mg/l  
Exposure time: 96 h  
Test substance: Fresh water  
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  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
GLP: no
- Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water  
GLP: no
- 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  
Analytical monitoring: no  
Test substance: Fresh water  
Method: OECD Test Guideline 211  
GLP: yes  
Remarks: Information given is based on data obtained from similar substances.
- 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

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- 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.
- oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:
- Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 7.2 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : IC50 (Selenastrum capricornutum (green algae)): 843.75 mg/l  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Method: OECD Test Guideline 209

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### 12.2 Persistence and degradability

#### Components:

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

Biodegradability : Test Type: aerobic  
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.

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  
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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Concentration: 100 mg/l  
Result: Readily biodegradable.  
Biodegradation: 87 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

### 12.3 Bioaccumulative potential

#### Components:

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

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



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

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

oxirane, mono[(C12-14-alkyloxy)methyl] derivs.:  
Partition coefficient: n-octanol/water : log Pow: 3.77 (20 °C)  
Method: OECD Test Guideline 107

### 12.4 Mobility in soil

#### Components:

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

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

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

### 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 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.

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### 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

#### 14.1 UN number or ID number

- ADR : UN 3082  
RID : UN 3082  
IMDG : UN 3082  
IATA : UN 3082

#### 14.2 UN proper shipping name

- ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
- RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
- IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)
- IATA : Environmentally hazardous substance, liquid, n.o.s.  
(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)

#### 14.3 Transport hazard class(es)

- ADR : 9  
RID : 9  
IMDG : 9  
IATA : 9

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### 14.4 Packing group

#### ADR

Packing group : III  
Classification Code : M6  
Hazard Identification Number : 90  
Labels : 9  
Tunnel restriction code : (-)

#### RID

Packing group : III  
Classification Code : M6  
Hazard Identification Number : 90  
Labels : 9

#### IMDG

Packing group : III  
Labels : 9  
EmS Code : F-A, S-F

#### IATA (Cargo)

Packing instruction (cargo aircraft) : 964  
Packing instruction (LQ) : Y964  
Packing group : III  
Labels : Miscellaneous

#### IATA (Passenger)

Packing instruction (passenger aircraft) : 964  
Packing instruction (LQ) : Y964  
Packing group : III  
Labels : Miscellaneous

### 14.5 Environmental hazards

#### ADR

Environmentally hazardous : yes

#### RID

Environmentally hazardous : yes

#### IMDG

Marine pollutant : yes

### 14.6 Special precautions for user

Not applicable

### 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 : This product does not contain

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Enriching lives through innovation

## ARALDITE® AV 144-2

Version	Revision Date:	SDS Number:	Date of last issue: 05.06.2018
1.4	08.10.2021	400001009962	Date of first issue: 27.05.2016

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Concern for Authorisation (Article 59). substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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

AIIC : 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 : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information.

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

TSCA : On or in compliance with the active portion of 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))

# SAFETY DATA SHEET

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### 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	: Long-term (chronic) aquatic hazard
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:

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

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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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