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

1.1 Product identifier

Trade name : ARALDITE® 2014-1 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 : Servicio de Información Toxicológica:+ 34 91 562 04 20
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.
Serious eye damage, Category 1	H318: Causes serious eye damage.
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 : Danger

Hazard statements :

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

Precautionary statements :

Prevention:

P261	Avoid breathing mist or vapours.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.

Response:

P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Disposal:

P501	Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous components which must be listed on the label:
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine

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

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. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (% w/w)
Fatty acids, C18-unsatd., dimers, polymers with oleic acid	68154-62-1	Skin Irrit. 2; H315 Eye Dam. 1; H318	25 - 50

and triethylenetetramine (UVCB)	01-2119972322-40	Skin Sens. 1A; H317 Aquatic Chronic 2; H411	
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine	68154-62-1	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 3; H412	3 - 7
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4 01-2119970376-29	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317	3 - 7
2,2'-Iminodi(ethylamine)	111-40-0 203-865-4 01-2119473793-27	Acute Tox. 4; H302 Acute Tox. 2; H330 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 STOT SE 3; H335	2 - 7
Amines, polyethylenepoly-, triethylenetetramine fraction	90640-67-8 01-2119487919-13	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Chronic 3; H412	1 - 3
4,4'-Isopropylidenediphenol	80-05-7 201-245-8 01-2119457856-23	Eye Dam. 1; H318 Skin Sens. 1; H317 Repr. 2; H361f STOT SE 3; H335 Aquatic Chronic 2; H411	1 - 3

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

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty

of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
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

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 data is available on the product itself.

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 : Neutralise with acid.
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

None

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.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

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

Other data : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
diethylenetriamine	111-40-0	VLA-ED	1 ppm 4,3 mg/m3	ES VLA
Further information	Skin, Sensitizer agent			
bisphenol A	80-05-7	VLA-ED	10 mg/m3	ES VLA
Further information	Sensitizer agent, Endocrine disturber. It is suspected that a series of substances used in industry, agriculture and consumer goods interferes with the endocrine system in human and animals and causes health damages as cancer, behavior disturbances and reproduction anomalies. Such a substances are named 'endocrine disturbers'. [Implementation of the communitary strategy for endocrine disturbers - substances suspected of interfering with the hormonal systems in human and animals - COM(1999) 706. European Community Commission, COM(2001) 262 final, Brussels 14-06-2001]. In humans, some potential exposure ways to endocrine disturbers are a direct exposure in the workplace or by consumer goods as food, some plastics, paints, detergents and cosmetics, or an indirect exposure by environment (air, water and soil). [Communitary strategy for endocrine disturbers (substances suspected of interfering with the hormonal systems in human and animals). European Community Commission, COM (1999) 706 final, Brussels, 17-12-1999]. These agents do not have a limit value assigned to prevent the potential effects of endocrine disturbance, which warrants an appropriate health surveillance., Chemical agent with an indicative limit value established by the EU. All these chemicals are contained in at least one of the directives of indicative limit values published so far (see Appendix C. Bibliography). Member states shall transpose the limits set in the Directives within a certain time frame. Once adopted, these values have the same validity as the rest of the values adopted by the country.			
		TWA (inhalable dust)	10 mg/m3	2009/161/EU
Further information	Indicative			

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

Substance name	End Use	Exposure routes	Potential health effects	Value
diethylenetriamine	Workers	Inhalation	Systemic effects, Short-term exposure	92,1 mg/m3
	Workers	Inhalation	Local effects, Short-term exposure	2,6 mg/m3
	Workers	Dermal	Systemic effects, Long-term exposure	11,4 mg/kg bw/day
	Workers	Inhalation	Systemic effects, Long-term exposure	15,4 mg/m3
	Workers	Dermal	Local effects, Long-	1,1 mg/cm2

			term exposure	
	Workers	Inhalation	Local effects, Long-term exposure	0,87 mg/m3
	Consumers	Oral	Local effects, Short-term exposure	4,88 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Short-term exposure	27,5 mg/m3
	Consumers	Dermal	Systemic effects, Long-term exposure	4,88 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	4,6 mg/m3
3,6-diazaoctanethylenediamin	Workers	Inhalation	Systemic effects, Short-term exposure	5380 mg/m3
	Workers	Dermal	Systemic effects, Long-term exposure	0,57 mg/kg bw/day
	Workers	Inhalation	Systemic effects, Long-term exposure	1 mg/m3
	Workers	Dermal	Local effects, Long-term exposure	0,028 mg/m3
	Consumers	Dermal	Systemic effects, Short-term exposure	8 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Short-term exposure	1600 mg/m3
	Consumers	Oral	Systemic effects, Short-term exposure	20 mg/kg bw/day
	Consumers	Dermal	Local effects, Short-term exposure	1 mg/cm2
	Consumers	Dermal	Local effects, Short-term exposure	0,25 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	0,29 mg/m3
	Consumers	Oral	Systemic effects, Long-term exposure	0,41 mg/kg bw/day
	Consumers	Dermal	Local effects, Long-term exposure	0,43 mg/cm2

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

Substance name	Environmental Compartment	Value
diethylenetriamine	Fresh water	0,56 mg/l
Remarks:	Assessment Factors	
	Marine water	0,056 mg/l
	Assessment Factors	
	Fresh water sediment	1072 mg/kg
	Equilibrium method	
	Marine sediment	107,2 mg/kg

	Equilibrium method	
	Soil	7,97 mg/kg
	Equilibrium method, Assessment Factors	
	Freshwater - intermittent	0,32 mg/l
	Assessment Factors	
3,6-diazaoctanethylenediamin	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

Engineering measures

Maintain air concentrations below occupational exposure standards.

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

Material : Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time : > 8 h

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. 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).

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. Recommended Filter type: Combined particulates and organic vapour type
Filter type	:	Filter type A-P

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	paste
Colour	:	grey
Odour	:	slight
pH	:	11 Concentration: 500 g/l (20 °C) Method: Measured
Melting point/freezing point	:	No data available
Boiling point	:	> 200 °C
Flash point	:	120 °C Method: Pensky-Martens closed cup, closed cup
Vapour pressure	:	< 0,15 hPa (20 °C)
Density	:	1,6 g/cm3 (25 °C)
Solubility(ies) Water solubility	:	partly soluble (20 °C)
Decomposition temperature	:	> 200 °C
Viscosity Viscosity, dynamic	:	1.178.000 mPa.s (25 °C) Method: Other guidelines thixotropic

9.2 Other information

Molecular weight : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate : > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

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

Skin corrosion/irritation

Product:

Species: Rabbit
Assessment: Irritant
Method: OECD Test Guideline 404

Result: Irritating to skin.
GLP: yes

Serious eye damage/eye irritation

Product:

Species: Rabbit
Assessment: Corrosive
Method: OECD Test Guideline 405
Result: Irreversible effects on the eye
GLP: yes

Respiratory or skin sensitisation

Product:

Remarks: Causes sensitisation.

Assessment: No data available

Germ cell mutagenicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine**:**

Genotoxicity in vitro : 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

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

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

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

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

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

trientine**:**
Genotoxicity in vitro : Concentration: 0 - 200 µg/L
Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

bisphenol A**:**
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Result: negative

Components:

diethylenetriamine**:**
Genotoxicity in vivo : Cell type: Somatic
Application Route: Oral
Dose: 85 - 850 mg/kg
Method: OECD Test Guideline 474
Result: negative

Application Route: Oral
Result: negative

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

bisphenol A**:**
Genotoxicity in vivo : 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

diethylenetriamine**:**
Species: Mouse, (male)
Application Route: Dermal
Dose: 56.3 mg/kg
Frequency of Treatment: 3 daily
Result: negative

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

bisphenol A**:**
Species: Rat, (male and female)
Application Route: Oral
Exposure time: 103 weeks
Frequency of Treatment: 7 daily
Result: negative

Carcinogenicity - Assessment : No data available

Reproductive toxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine**:**
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.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine**:**
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.

diethylenetriamine**:**
Species: Rat, male and female
Application Route: Oral
General Toxicity - Parent: No observed adverse effect level: 30 mg/kg wet weight
Method: OECD Test Guideline 421

bisphenol A**:**
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: Embryotoxic effects and adverse effects on the offspring were detected.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine**:**
Effects on foetal development : Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 15 mg/kg body weight

Developmental Toxicity: No observed adverse effect level: 15 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic development were detected.

diethylenetriamine**:**

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 100 mg/kg body weight
Method: OECD Test Guideline 421

trientine**:**

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

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

bisphenol A**:**

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: < 160 mg/kg body weight
Method: OECD Test Guideline 416
Result: No teratogenic effects

Components:

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

bisphenol A**:**
Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT - single exposure

Components:

diethylenetriamine**:**
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

bisphenol A**:**
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine**:**
Species: Rat, male and female
NOAEL: 1000 mg/kg
Application Route: Ingestion
Exposure time: 6 WeeksNumber of exposures: 7 d
Method: Subacute toxicity

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

diethylenetriamine**:**
Species: Rat, male and female
: 70 - 80
Application Route: Ingestion
Test atmosphere: vapour
Exposure time: 360 hNumber of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOAEL: 114
Application Route: Skin contact
Exposure time: 9.600 hNumber of exposures: 6 d
Method: Chronic toxicity

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

bisphenol A**:**
Species: Dog, male and female
: 75 mg/kg, 10
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 2.160 hNumber of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
LOAEL: 600 mg/kg
Application Route: Ingestion
Exposure time: 672 hNumber 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
Ingestion: No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine**:**

Toxicity to fish	:	LC50 (Brachydanio rerio (zebrafish)): 7,07 mg/l Exposure time: 96 h 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)): 5,18 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)): 2,43 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to bacteria	:	EC50 (activated sludge): 421 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209

polyamide resin**:**

Ecotoxicology Assessment		
Chronic aquatic toxicity	:	Harmful to aquatic life with long lasting effects.

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

Toxicity to fish	:	LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 9,2 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae	:	ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to bacteria	:	EC50 (Pseudomonas putida): 181 mg/l

Exposure time: 16 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

Ecotoxicology Assessment
Acute aquatic toxicity : Harmful to aquatic life.

diethylenetriamine**:**

Toxicity to fish : LC50 : 430 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 32 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

Toxicity to algae : EbC50 (Selenastrum capricornutum (green algae)): 1.164 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l
Exposure time: 28 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 5,6 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.20

Toxicity to soil dwelling organisms : EC50: > 1.000 mg/kg
Exposure time: 56 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222

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

trientine**:**

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

Method: Fish Acute Toxicity Test

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 31,1 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: Directive 67/548/EEC, Annex V, C.2.
Toxicity to algae	:	ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l Exposure time: 72 h Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to bacteria	:	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.

bisphenol A**:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 7,5 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 : 3,9 - 10,2 mg/l Exposure time: 48 h (Ceriodaphnia dubia (Water flea)):
Toxicity to algae	:	EC50 (Selenastrum capricornutum (green algae)): 2,5 - 3,1 mg/l Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	NOEC: 0,016 mg/l Exposure time: 444 d Species: Pimephales promelas (fathead minnow) Test Type: flow-through test Test substance: Fresh water Method: Fish Life Cycle Toxicity Remarks: Toxic to aquatic organisms.
Ecotoxicology Assessment Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting 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 Method, other

diethylenetriamine**:**

Biodegradability : Inoculum: activated sludge
Result: Readily biodegradable
Biodegradation: 87 %
Exposure time: 21 d
Method: OECD Test Guideline 301D

Photodegradation : Test Type: Air
Rate constant: 500000
Degradation (direct photolysis): 50 %

trientine**:**

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

Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 20 %
Exposure time: 84 d
Method: Inherent Biodegradability: Modified SCAS Test

bisphenol A**:**

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 1 - 2 %
Exposure time: 28 d

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

diethylenetriamine**:**

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 42 d
Bioconcentration factor (BCF): 0,3 - 6,3
Test substance: Fresh water

Method: flow-through test
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: -1,58 (20 °C)
pH: 7

trientine**:**
Partition coefficient: n-octanol/water : log Pow: -2,65 (20 °C)
Method: OECD Test Guideline 117

12.4 Mobility in soil

Components:

diethylenetriamine**:**
Distribution among environmental compartments : Koc: 19111

trientine**:**
Distribution among environmental compartments : Koc: 1584,9 - 5012Method: 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

No data available

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.

(POLYAMIDE 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

IMDG

14.1 UN number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POLYAMIDE 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. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	:	9
14.4 Packing group	:	III
Labels	:	9
14.5 Environmental hazards		
Marine pollutant	:	no

RID

14.1 UN number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	:	9
14.4 Packing group	:	III
Labels	:	9
14.5 Environmental hazards		
Marine pollutant	:	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 - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

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

The components of this product are reported in the following inventories:

TSCA	:	On the inventory, or in compliance with the inventory
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	:	Low volume exemption
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	:	Not 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)

15.2 Chemical safety assessment

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.

H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H330	:	Fatal if inhaled.
H335	:	May cause respiratory irritation.
H361f	:	Suspected of damaging fertility.
H411	:	Toxic to aquatic life with long lasting effects.
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
Eye Irrit.	:	Eye irritation
Repr.	:	Reproductive toxicity
Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
STOT SE	:	Specific target organ toxicity - single exposure

Further information

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

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.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

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

1.1 Product identifier

Trade name : ARALDITE® 2014-1 GB RESIN

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

Use of the Substance/Mixture : Epoxy constituents

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA
Address : Everslaan 45
3078 Everberg
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
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 : Danger

Hazard statements :

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

Precautionary statements :

Prevention:

P261	Avoid breathing mist or vapours.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.

Response:

P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Disposal:

P501	Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous components which must be listed on the label:
Bisphenol A epoxy resin

bisphenol F-epoxy resin

Butanedioldiglycidyl ether

terephthalic acid diglycidylester

Additional Labelling:

EUH205 Contains epoxy constituents. May produce an allergic reaction.

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.
No information available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (% w/w)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	25068-38-6 500-033-5 01-2119456619-26	Eye Irrit. 2; H319 Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Chronic 2; H411	30 - 60
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	9003-36-5 500-006-8 -	Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Chronic 2; H411	7 - 13
1,4-Bis(2,3-epoxypropoxy)butane	2425-79-8 219-371-7 01-2119494060-45	Acute Tox. 4; H302 Acute Tox. 4; H332 Acute Tox. 4; H312 Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Chronic 3; H412	1 - 3
Bis(2,3-epoxypropyl) terephthalate	7195-44-0 230-565-0 01-2119909640-43	Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1; H317	1 - 3
Tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate	7237-83-4 230-638-7 01-2119912714-41	Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411	0.1 - 1

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

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
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

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 data is available on the product itself.

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

None

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.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Sudden Release of Pressure Hazard

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.

Advice on common storage	:	Strong acids Strong bases Strong oxidizing agents
Recommended storage temperature	:	2 - 40 °C
Other data	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Not applicable

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Bisphenol A epoxy resin	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
terephthalic acid diglycidylester	Workers	Dermal	Systemic effects, Long-term exposure	2 mg/kg bw/day
	Workers	Inhalation	Systemic effects, Long-term exposure	14 mg/m3
	Consumers	Dermal	Systemic effects, Long-term exposure	1 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	3.5 mg/m3
	Consumers	Oral	Systemic effects, Long-term exposure	1 mg/kg bw/day
trimellitic acid	Workers	Dermal	Systemic effects,	1.25 mg/kg

triglycidylester			Long-term exposure	bw/day
	Consumers	Dermal	Systemic effects, Long-term exposure	0.62 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	2.18 mg/m3
	Workers	Inhalation	Systemic effects, Long-term exposure	8.75 mg/m3
	Consumers	Oral	Systemic effects, Long-term exposure	0.62 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
Bisphenol A epoxy resin	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
terephthalic acid diglycidylester	Fresh water	0.00294 mg/l
	Assessment Factors	
	Marine water	0.00029 mg/l
	Assessment Factors	
	Freshwater - intermittent	0.0294 mg/l
	Assessment Factors	
	Sewage treatment plant	1.86 mg/l
	Assessment Factors	
	Fresh water sediment	0.00869 mg/kg
	Equilibrium method	

		Marine sediment	0.00087 mg/kg
	Equilibrium method		
		Soil	0.00553 mg/kg
	Equilibrium method		
trimellitic acid triglycidylester		Fresh water	0.0067 mg/l
	Assessment Factors		
		Marine water	0.0067 mg/l
	Assessment Factors		
		Freshwater - intermittent	0.067 mg/l
	Assessment Factors		
		Sewage treatment plant	2.89 mg/l
	Assessment Factors		
		Sediment	0.0418 mg/kg
	Equilibrium method		
		Marine sediment	0.00418 mg/kg
	Equilibrium method		
		Soil	0.0305 mg/kg
	Equilibrium method		

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

Material : Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time : > 8 h

Material : Nitrile rubber

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

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves. 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).

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. Recommended Filter type: Combined particulates and organic vapour type
Filter type	:	Filter type A-P

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	beige
Odour	:	slight
pH	:	ca. 7 Concentration: 500 g/l (20 °C)
Melting point/freezing point	:	No data available
Boiling point/boiling range	:	> 200 °C
Flash point	:	> 100 °C Method: closed cup
Vapour pressure	:	< 1.33 hPa (20 °C)
Density	:	1.6 g/cm3 (25 °C)
Solubility(ies)		
Water solubility	:	practically insoluble (20 °C)
Auto-ignition temperature	:	does not ignite
Decomposition temperature	:	> 200 °C
Viscosity		
Viscosity, dynamic	:	92,800 mPa.s (25 °C) Method: Other guidelines

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

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

Acute oral toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate : > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

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

Skin corrosion/irritation

Components:

Bisphenol A epoxy resin**:**
Species: Rabbit
Assessment: Mild skin irritant
Method: OECD Test Guideline 404
Result: Irritating to skin.

bisphenol F-epoxy resin**:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

Butanedioldiglycidyl ether**:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

terephthalic acid diglycidylester**:**
Species: Rabbit
Assessment: Mild skin irritant
Result: Normally reversible injuries

trimellitic acid triglycidylester**:**
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation

Components:

Bisphenol A epoxy resin**:**
Species: Rabbit
Assessment: Mild eye irritant
Method: OECD Test Guideline 405
Result: Irritating to eyes.

bisphenol F-epoxy resin**:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

Butanedioldiglycidyl ether**:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.

terephthalic acid diglycidylester**:**
Species: Rabbit
Assessment: Corrosive
Result: Irreversible effects on the eye

trimellitic acid triglycidylester**:**
Species: Rabbit
Assessment: Irritant
Method: OECD Test Guideline 405
Result: Normally reversible injuries

Respiratory or skin sensitisation

Components:

Bisphenol A epoxy resin**:**
Exposure routes: Skin
Species: Mouse
Assessment: May cause sensitisation by skin contact.
Method: OECD Test Guideline 429
Result: Causes sensitisation.

bisphenol F-epoxy resin**:**
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.

Butanedioldiglycidyl ether**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

terephthalic acid diglycidylester**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Causes sensitisation.

trimellitic acid triglycidylester**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Causes sensitisation.

Assessment: No data available

Germ cell mutagenicity

Components:

Bisphenol A epoxy resin**:**
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 F-epoxy resin**:**
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

Butanedioldiglycidyl ether**:**
Genotoxicity in vitro : Concentration: 10 - 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive

: Concentration: 1 - 100 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive

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

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

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

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

Components:

Bisphenol A epoxy resin**:**
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 F-epoxy resin**:**
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

Butanedioldiglycidyl ether**:**
Genotoxicity in vivo : Test Type: In vivo micronucleus test
Test species: Mouse
Cell type: Somatic
Application Route: Oral
Exposure time: 4 d
Dose: 187.5 - 750 mg/kg
Method: OECD Test Guideline 474
Result: negative

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

terephthalic acid diglycidylester**:**
Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 483
Result: negative

Application Route: Oral
Method: OECD Test Guideline 474

Result: negative

trimellitic acid triglycidylester**:**
Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 483
Result: negative

Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Components:

Bisphenol A epoxy resin**:**
Germ cell mutagenicity-Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Butanedioldiglycidyl ether**:**
Germ cell mutagenicity-Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Germ cell mutagenicity-Assessment : No data available

Carcinogenicity

Components:

Bisphenol A epoxy resin**:**
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

Carcinogenicity - Assessment : No data available

Reproductive toxicity

Components:

Bisphenol A epoxy resin**:**

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 F-epoxy resin**:**

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:

Bisphenol A epoxy resin**:**

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 F-epoxy resin**:**

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

Bisphenol A epoxy resin**:**
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 F-epoxy resin**:**
Species: Rat, male and female
NOAEL: 250 mg/kg
Application Route: Ingestion
Exposure time: 13 WeeksNumber of exposures: 7 d
Method: Subchronic toxicity

Butanedioldiglycidyl ether**:**
Species: Rat, male and female
NOAEL: 200 mg/kg
Application Route: Ingestion
Exposure time: 28 dNumber of exposures: 7 d
Method: Subacute toxicity

terephthalic acid diglycidylester**:**
Species: Rat, male and female
NOAEL: > 240 mg/kg
Application Route: Ingestion
Exposure time: 672 hNumber of exposures: 7 d
Method: Subacute toxicity

trimellitic acid triglycidylester**:**
Species: Rat, male
NOAEL: 150
Application Route: Ingestion
Exposure time: 672 hNumber of exposures: 7 d
Method: Subacute toxicity

Species: Rat, female
NOAEL: >= 500
Application Route: Ingestion
Exposure time: 672 hNumber of exposures: 7 d
Method: Subacute 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

Ingestion: No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

Bisphenol A epoxy resin**:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2.7 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water
Toxicity to algae	:	EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: EPA-660/3-75-009
Toxicity to bacteria	:	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

bisphenol F-epoxy resin**:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.55 mg/l Exposure time: 96 h 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
Toxicity to bacteria	:	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.

Butanedioldiglycidyl ether**:**

Toxicity to fish	:	LC50 (Brachydanio rerio (zebrafish)): 24 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 75 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae	:	EL50 : > 160 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to bacteria	:	IC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209

terephthalic acid diglycidylester**:**

Toxicity to fish	:	LC50 : 8.8 mg/l Exposure time: 96 h Test Type: static test

Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 81 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 2.94 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

trimellitic acid triglycidylester**:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 6.7 mg/l
Exposure time: 96 h
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)): 21.7 mg/l
Exposure time: 48 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 27.45 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to bacteria : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Test substance: brackish water
Method: OECD Test Guideline 209

12.2 Persistence and degradability

Components:

Bisphenol A epoxy resin**:**

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
GLP: yes

Remarks: Fresh water

Degradation half life (DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
GLP: yes
Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
GLP: yes
Remarks: Fresh water

bisphenol F-epoxy resin**:**

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.

Butanedioldiglycidyl ether**:**

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

terephthalic acid diglycidylester**:**

Stability in water : Degradation half life (DT50): 118.26 hrs (20 °C) pH: 7
Method: OECD Test Guideline 111
GLP: yes
Remarks: Fresh water

trimellitic acid triglycidylester**:**

Biodegradability : Inoculum: Fresh water
Result: Not readily biodegradable.
Biodegradation: 59 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): 101.91 hrs (20 °C) pH: 4
Method: OECD Test Guideline 111
GLP: yes
Remarks: Fresh water

12.3 Bioaccumulative potential

Components:

Bisphenol A epoxy resin**:**

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 F-epoxy resin**:**		
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
Butanedioldiglycidyl ether**:**		
Partition coefficient: n-octanol/water	:	log Pow: -0.269 (25 °C) pH: 6.7 Method: OECD Test Guideline 117
terephthalic acid diglycidylester**:**		
Partition coefficient: n-octanol/water	:	log Pow: 1.7 (25 °C) Method: OECD Test Guideline 117 GLP: yes
trimellitic acid triglycidylester**:**		
Partition coefficient: n-octanol/water	:	log Pow: 0.9 (25 °C) Method: OECD Test Guideline 117

12.4 Mobility in soil

Components:

Bisphenol A epoxy resin**:**		
Distribution among environmental compartments	:	Koc: 445
bisphenol F-epoxy resin**:**		
Distribution among environmental compartments	:	Koc: 4460Method: OECD Test Guideline 121
Butanedioldiglycidyl ether**:**		
Distribution among environmental compartments	:	Koc: 12.59Method: OECD Test Guideline 121
terephthalic acid diglycidylester**:**		
Distribution among environmental compartments	:	Koc: 2Method: OECD Test Guideline 121
trimellitic acid triglycidylester**:**		
Distribution among environmental compartments	:	Koc: 251Method: 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.
(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

IMDG

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
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. (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
Marine pollutant : no

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
Marine pollutant : 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 - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

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

The components of this product are reported in the following inventories:

TSCA : Not On TSCA Inventory

DSL : This product contains the following components that are not on the Canadian DSL nor NDSL.

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

Inventories

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

15.2 Chemical safety assessment

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H312	:	Harmful in contact with skin.
H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H332	:	Harmful if inhaled.
H411	:	Toxic to aquatic life with long lasting effects.
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
Eye Irrit.	:	Eye irritation
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation

Further information

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