

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2014-1 GB HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: 06.11.2017
1.3	07.11.2017	400001008718	Date of first issue: 01.07.2016

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 : Hardener
Substance/Mixture

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 : Global_Product_EHS_AdMat@huntsman.com
responsible for the SDS

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.
Reproductive toxicity, Category 1B	H360F: May damage fertility.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

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

Precautionary statements	Prevention:	
	P201	Obtain special instructions before use.
	P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ protective clothing/ 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.
	P308 + P313	IF exposed or concerned: Get medical advice/ attention.

Hazardous components which must be listed on the label:

fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine

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

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

4,4'-Isopropylidenediphenol



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

2,2'-Iminodi(ethylamine)

4,4'-Isopropylidenediphenol

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. Index-No. Registration number	Classification	Concentration (% w/w)
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine (UVCB)	68154-62-1 - 01-2119972322-40	Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1A; H317 Aquatic Chronic 2; H411	>= 30 - < 50
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	>= 2,5 - < 10
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4	Acute Tox. 4; H302 Skin Corr. 1A; H314	>= 5 - < 9,65

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	01-2119970376-29	Skin Sens. 1B; H317	
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	>= 3 - < 5
4,4'-Isopropylidenediphenol	80-05-7 201-245-8 01-2119457856-23	Eye Dam. 1; H318 Skin Sens. 1; H317 Repr. 1B; H360F STOT SE 3; H335 Aquatic Chronic 2; H411	>= 1 - < 2,5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- | | |
|-------------------------|---|
| General advice | : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended. |
| If inhaled | : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician. |
| In case of skin contact | : 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.

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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.

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6.4 Reference to other sections

See Section 1 for emergency contact information.

For personal protection see section 8.

For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Do not breathe vapours/dust.
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
- Further information on storage stability : 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
barium sulfate	7727-43-7	TWA (inhalable)	10 mg/m3	GB EH40

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		dust)		
Further information	For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
		TWA (Respirable dust)	4 mg/m3	GB EH40
Further information	For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
2,2'-Iminodi(ethylamine)	111-40-0	TWA	1 ppm 4,3 mg/m3	GB EH40
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.,			

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	Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
4,4'-Isopropylidenediphenol	80-05-7	TWA (inhalable dust)	10 mg/m3	GB EH40
Further information	Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
		TWA (inhalable dust)	10 mg/m3	2009/161/EU
Further information	Indicative, In the Annex to Directive 2009/161/EU, the reference to bisphenol A is deleted with effect from 21 August 2018.			
		TWA ((inhalable fraction))	2 mg/m3	2017/164/EU
Further information	Indicative			
Diethylenetriamine	111-40-0	TWA	1 ppm 4,3 mg/m3	GB EH40
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
4,4'-isopropylidenediphenol	80-05-7	TWA (inhalable dust)	10 mg/m3	GB EH40
Further information	Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			
		TWA (inhalable dust)	10 mg/m3	2009/161/EU
Further information	Indicative, In the Annex to Directive 2009/161/EU, the reference to bisphenol A is deleted with effect from 21 August 2018.			
		TWA ((inhalable fraction))	2 mg/m3	2017/164/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-term exposure	1,1 mg/cm2
	Workers	Inhalation	Local effects, Long-term exposure	0,87 mg/m3
	Consumers	Oral	Local effects, Short-term exposure	4,88 mg/kg bw/day

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	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
triethylenetetramine	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
2,2'-Iminodi(ethylamine)	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-term exposure	1,1 mg/cm2
	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

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				bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	4,6 mg/m3
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
N'-(3-aminopropyl)- N,N-dimethylpropane- 1,3-diamine	Workers	Inhalation	Long-term systemic effects	3,7 mg/m3
	Workers	Inhalation	Acute systemic effects	7,5 mg/m3
	Workers	Inhalation	Long-term local effects	3,7 mg/m3
	Workers	Inhalation	Acute local effects	7,5 mg/m3
	Workers	Dermal	Long-term systemic effects	0,67 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0,65 mg/m3
	Consumers	Inhalation	Long-term local effects	0,65 mg/m3
	Consumers	Oral	Long-term systemic effects	0,2 mg/kg

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	214 mg/kg
	Equilibrium method	
	Freshwater - intermittent	0,32 mg/l
	Assessment Factors	
triethylenetetramine	Fresh water	190 µg/l

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	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	
2,2'-Iminodi(ethylamine)	Fresh water	0,56 mg/l
	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	214 mg/kg
	Equilibrium method	
	Freshwater - intermittent	0,32 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
	Assessment Factors	

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N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	Fresh water	9,2 µg/l
Assessment Factors		
	Marine water	0,92 µg/l
Assessment Factors		
	Freshwater - intermittent	92 µg/l
Assessment Factors		
	Sewage treatment plant	18,1 mg/l
Assessment Factors		
	Fresh water sediment	0,0336 mg/kg
Equilibrium method		
	Marine sediment	0,00336 mg/kg
Equilibrium method		
	Soil	0,00132 mg/kg
Equilibrium method		
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

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

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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
Odour Threshold	: No data is available on the product itself.
pH	: 11 (20 °C) Concentration: 500 g/l Method: Measured
Melting point/freezing point	: No data available
Boiling point	: > 200 °C
Flash point	: 120 °C Method: Pensky-Martens closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Burning rate	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: < 0,15 hPa (20 °C)
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.

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Density : 1,6 g/cm³ (25 °C)

Solubility(ies)
Water solubility : partly soluble (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 : 1 178 000 mPa,s (25 °C)
Method: Other guidelines
thixotropic

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

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

9.2 Other information

Molecular weight : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

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 (NO_x)
Carbon oxides
Burning produces noxious and toxic fumes.

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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.

Serious eye damage/eye irritation

Product:

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

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

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: 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

4,4'-Isopropylidenediphenol:

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

Components:

2,2'-Iminodi(ethylamine):

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

Application Route: Oral
Result: negative

4,4'-Isopropylidenediphenol:

Genotoxicity in vivo : Method: OECD Test Guideline 474
Result: negative

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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

2,2'-Iminodi(ethylamine):

Species: Mouse, (male)

Application Route: Dermal

Dose: 56.3 mg/kg

Frequency of Treatment: 3 daily

Result: negative

4,4'-Isopropylidenediphenol:

Species: Rat, (male and female)

Application Route: Oral

Exposure time: 103 weeks

Frequency of Treatment: 7 daily

Result: negative

Carcinogenicity - Assessment : No data available

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.

2,2'-Iminodi(ethylamine):

Species: Rat, male and female

Application Route: Oral

General Toxicity - Parent: No observed adverse effect level:

30 mg/kg wet weight

Method: OECD Test Guideline 421

Result: positive

4,4'-Isopropylidenediphenol:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 416

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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.

2,2'-Iminodi(ethylamine):

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

4,4'-Isopropylidenediphenol:

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

Components:

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

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

4,4'-Isopropylidenediphenol:

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

STOT - single exposure

Components:

2,2'-Iminodi(ethylamine):

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

4,4'-Isopropylidenediphenol:

Assessment: The substance or mixture is classified as specific target organ toxicant, single

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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

NOEC: 550

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 3 WeeksNumber of exposures: 7 d

Method: Subchronic toxicity

Species: Mouse, male

NOAEL: $\geq 56,3$

Application Route: Skin contact

Exposure time: 20 hNumber of exposures: 3 d

Method: Chronic toxicity

2,2'-Iminodi(ethylamine):

Species: Rat, male and female

NOEC: 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

4,4'-Isopropylidenediphenol:

Species: Dog, male and female

NOEC: 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

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LOAEL: 600 mg/kg
Application Route: Ingestion
Exposure time: 672 hNumber of exposures: 7 d
Method: Subchronic toxicity

Repeated dose toxicity - : No data available
Assessment

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available

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

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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 microorganisms : EC50 (activated sludge): 421 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:
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 microorganisms : EC50 (Pseudomonas putida): 181 mg/l
Exposure time: 16 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

2,2'-Iminodi(ethylamine):
Toxicity to fish : LC50 : 430 mg/l

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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.

4,4'-Isopropylidenediphenol:

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)

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Test Type: flow-through test
Test substance: Fresh water
Method: EPA OPPTS 850.1500
Remarks: Toxic to aquatic organisms.

M-Factor (Chronic aquatic toxicity) : 1

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

2,2'-Iminodi(ethylamine):

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 %

4,4'-Isopropylidenediphenol:

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

2,2'-Iminodi(ethylamine):

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

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Remarks: Bioaccumulation is unlikely.

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

12.4 Mobility in soil

Components:

2,2'-Iminodi(ethylamine):
Distribution among environmental compartments : Koc: 19111

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)
(POLYAMIDE RESIN, 4,4'-ISOPROPYLIDENEDIPHENOL)

14.3 Transport hazard class(es) : 9

14.4 Packing group : III

Labels : Miscellaneous

Packing instruction (cargo) : 964

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aircraft)
Packing instruction : 964
(passenger aircraft)

IMDG

14.1 UN number : UN 3082
14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(POLYAMIDE RESIN)
(POLYAMIDE RESIN, 4,4'-ISOPROPYLIDENEDIPHENOL)
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)
(POLYAMIDE RESIN, 4,4'-ISOPROPYLIDENEDIPHENOL)
14.3 Transport hazard class(es) : 9
14.4 Packing group : III
Labels : 9
14.5 Environmental hazards
Environmentally hazardous : yes

RID

14.1 UN number : UN 3082
14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(POLYAMIDE RESIN)
(POLYAMIDE RESIN, 4,4'-ISOPROPYLIDENEDIPHENOL)
14.3 Transport hazard class(es) : 9
14.4 Packing group : III
Labels : 9
14.5 Environmental hazards
Environmentally hazardous : yes

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

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REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : 4,4'-isopropylidenediphenol

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

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

DSL : All components of this product are on the Canadian DSL

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

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

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

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

PICCS : Not in compliance with the inventory

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

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

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

Inventories

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

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.

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H330	: Fatal if inhaled.
H335	: May cause respiratory irritation.
H360F	: May damage 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
2009/161/EU	: Europe. COMMISSION DIRECTIVE 2009/161/EU establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
2017/164/EU	: Commission Directive (EU) 2017/164 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
GB EH40	: UK. EH40 WEL - Workplace Exposure Limits
2009/161/EU / TWA	: Limit Value - eight hours
2017/164/EU / TWA	: Limit Value - eight hours
GB EH40 / TWA	: Long-term exposure limit (8-hour TWA reference period)

Further information

Classification of the mixture:

Skin Irrit. 2	H315
Eye Dam. 1	H318
Skin Sens. 1	H317
Repr. 1B	H360F
Aquatic Chronic 2	H411

Classification procedure:

Based on product data or assessment
Based on product data or assessment
Calculation method
Calculation method
Calculation method

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