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

1.1 Product identifier

Trade name : ARALDITE® 2015-1 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 : Berlin: 0049 30 19 24 0 & 0049 30 30 68 6 7 11
Bonn: 0049 228 19 27 0 & 0049 228 28 7 3 32 11
Erfurt: 0049 361 73 07 30
Freiburg: 0049 761 16 24 0
Göttingen: 0049 51 19 24 0 & 0049 551 38 31 80
Homburg: 0049 6841 19 24 0
Mainz: 0049 6131 19 24 0 & 0049 6131 23 24 66
München: 0049 89 19 24 0
Nürnberg: 0049 911 39 8 2 45 1
EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin corrosion, Sub-category 1A	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.

Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
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 :

H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P391	Collect spillage.

Hazardous components which must be listed on the label:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated

Reaction mass of trientine and trientine, mono- and di-propoxylated

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine

3-aminopropyltriethoxysilane

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)
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	68683-29-4 Polymer	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317	>= 30 - < 60
Bis(isopropyl)naphthalene	38640-62-9 254-052-6 01-2119565150-48	Asp. Tox. 1; H304 Aquatic Chronic 1; H410	>= 7 - < 13
Reaction mass of trientine and trientine, mono- and di-propoxylated	Not Assigned - 01-2120098765-38	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1B; H317 Aquatic Chronic 2; H411	>= 7 - < 13
2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine	25513-64-8 247-063-2 01-2119560598-25	Acute Tox. 4; H302 Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1A; H317	>= 7 - < 13
2,4,6-Tris(dimethylaminomethyl)phenol	90-72-2 202-013-9 603-069-00-0 01-2119560597-27	Skin Corr. 1C; H314 Eye Dam. 1; H318	>= 1 - < 3
3-Aminopropyltriethoxysilane	919-30-2 213-048-4 612-108-00-0 01-2119480479-24	Acute Tox. 4; H302 Skin Corr. 1B; H314 Skin Sens. 1; H317	>= 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 : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.

If on clothes, remove clothes.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

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

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

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

Hazardous combustion products : No hazardous combustion products are known

5.3 Advice for firefighters

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

Specific extinguishing : No data is available on the product itself.

methods

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

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. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.
Storage class (TRGS 510)	:	8A, Combustible, corrosive hazardous materials
Recommended storage temperature	:	2 - 40 °C
Further information on storage stability	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s)	:	No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

Substance name	End Use	Exposure routes	Potential health effects	Value
bis(isopropyl)naphthalene	Workers	Inhalation	Systemic effects, Long-term exposure	30 mg/m3
	Workers	Dermal	Systemic effects, Long-term exposure	4,3 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	7,4 mg/m3
	Consumers	Dermal	Systemic effects, Long-term exposure	2,1 mg/kg bw/day
	Consumers	Oral	Systemic effects, Long-term exposure	2,1 mg/kg bw/day
2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine	Consumers	Oral	Long-term systemic effects	0,05 mg/kg
Reaction mass of trientine and trientine, mono- and di-propoxylated	Workers	Inhalation	Long-term systemic effects	3,51 mg/m3
	Workers	Dermal	Long-term systemic effects	2 mg/kg

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

Substance name		Environmental Compartment	Value
2,4,6-Tris(dimethylaminomethyl)phenol		Fresh water	0,084 mg/l
Remarks:	Assessment Factors		
		Marine water	0,0084 mg/l
	Assessment Factors		
		Sewage treatment plant	0,2 mg/l
	Assessment Factors		
bis(isopropyl)naphthalene		Fresh water	0,26 µg/l
	Assessment Factors		
		Marine water	0,026 µg/l
	Assessment Factors		
		Sewage treatment plant	0,15 mg/l
	Assessment Factors		
		Fresh water sediment	0,94 mg/kg
	Equilibrium method		
		Marine sediment	0,094 mg/kg
	Equilibrium method		
		Soil	0,1872 mg/kg
	Equilibrium method		
		Secondary Poisoning	25 mg/kg
	Assessment Factors		
Siloxanes and silicones, di-Me, reaction products with silica		Fresh water sediment	> 100 mg/kg
	Assessment Factors		
		Soil	23 mg/kg
	Assessment Factors		
2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine		Fresh water	0,102 mg/l
	Assessment Factors		
		Marine water	0,01 mg/l
	Assessment Factors		
		Sewage treatment plant	72 mg/l
	Assessment Factors		
		Fresh water sediment	0,662 mg/kg
		Marine sediment	0,062 mg/kg

Reaction mass of trientine and trientine, mono- and di-propoxylated		Fresh water	0,0041 mg/l
	Assessment Factors		
		Marine water	0,0004 mg/l
	Assessment Factors		
		Sewage treatment plant	4,3 mg/l
	Assessment Factors		
		Fresh water sediment	0,171 mg/kg
	Equilibrium method		
		Marine sediment	0,0171 mg/kg
	Equilibrium method		
		Soil	0,00317 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
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	:	amine-like
Odour Threshold	:	No data is available on the product itself.
pH	:	ca. 11 (20 °C) Concentration: 500 g/l
Melting point/freezing point	:	No data available
Boiling point	:	> 200 °C
Flash point	:	> 100 °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	:	No data is available on the product itself.
Relative vapour density	:	No data is available on the product itself.
Relative density	:	No data is available on the product itself.
Density	:	1,42 g/cm3 (23 °C)
Solubility(ies)		
Water solubility	:	insoluble
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	:	50 000 - 100 000 mPa.s (20 °C)
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.

9.2 Other information

Molecular weight	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

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
Nitrogen oxides (NOx)
Sulphur 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

Components:

bis(isopropyl)naphthalene**:**

Acute inhalation toxicity	:	LC50 (Rat, male and female): > 5,64 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403

3-aminopropyltriethoxysilane**:**
Acute inhalation toxicity : LC50 (Rat, male): > 5 ppm
Exposure time: 6 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**
Acute dermal toxicity : LD50 (Rabbit): > 3 g/kg

bis(isopropyl)naphthalene**:**
Acute dermal toxicity : LD50 (Rat, male and female): > 4 500 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Acute dermal toxicity : LD50 (Rat): >= 2 150 mg/kg
Method: OECD Test Guideline 402

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Acute dermal toxicity : LD50 (Rat, male): > 971 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

3-aminopropyltriethoxysilane**:**
Acute dermal toxicity : LD50 (Rabbit, male and female): 4 075 mg/kg
Method: Acute Dermal Toxicity
Assessment: The substance or mixture has no acute dermal toxicity

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

Skin corrosion/irritation

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**
Species: Rabbit
Assessment: Moderate skin irritant
Result: Irritating to skin.

bis(isopropyl)naphthalene**:**
Species: Rabbit
Exposure time: 4 h

Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Normally reversible injuries

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Species: Rabbit
Exposure time: 72 h
Method: OECD Test Guideline 404
Result: Irritating to skin.

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Species: Rabbit
Result: Corrosive after 3 minutes or less of exposure

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Corrosive after 1 to 4 hours of exposure

3-aminopropyltriethoxysilane**:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: Causes burns.

Serious eye damage/eye irritation

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**
Species: Rabbit
Assessment: Mild eye irritant
Result: slight irritation

bis(isopropyl)naphthalene**:**
Species: Rabbit
Assessment: No eye irritation
Method: OECD Test Guideline 405
Result: No eye irritation

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Species: Rabbit
Result: Eye irritation

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Corrosive

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Species: Rabbit
Assessment: Corrosive
Result: Corrosive

3-aminopropyltriethoxysilane**:**
Species: Rabbit

Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.

Respiratory or skin sensitisation

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

bis(isopropyl)naphthalene**:**
Test Type: Maximisation Test
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Exposure routes: Skin
Species: CBA/Ca
Method: OECD Test Guideline 429
Result: Probability or evidence of low to moderate skin sensitisation rate in humans
GLP: yes

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: The product is a skin sensitiser, sub-category 1A.

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

3-aminopropyltriethoxysilane**:**
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: The product is a skin sensitiser, sub-category 1B.

Components:

bis(isopropyl)naphthalene**:**

Assessment:	May be harmful if swallowed or if inhaled. Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

bis(isopropyl)naphthalene**:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Concentration: 9.5 - 60 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

: Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 92 mg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

: Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Concentration: 40 - 60 mg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 476
Result: negative
GLP: yes

: Test Type: Ames test
Test system: Salmonella typhimurium
Method: OECD Test Guideline 471
Result: positive
GLP: yes

: Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Method: OECD Test Guideline 473
Result: negative
GLP: yes

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: negative

: Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

: Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Concentration: 2 mg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

2,4,6-Tris(dimethylaminomethyl)phenol**:**

Genotoxicity in vitro : Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

: Concentration: 2500 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

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

3-aminopropyltriethoxysilane**:**

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Components:

bis(isopropyl)naphthalene**:**

Genotoxicity in vivo : Test Type: Micronucleus test
Test species: Mouse (male and female)
Application Route: Intraperitoneal injection
Dose: 1.92 g/kg
Method: OECD Test Guideline 474
Result: negative

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**

Genotoxicity in vivo : Test species: Chinese hamster (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 825 - 1000 mg/kg

Method: OECD Test Guideline 474
Result: negative

Test Type: In vivo micronucleus test
Test species: Mouse (male and female)
Application Route: Oral
Dose: 850 - 1000 mg/kg
Method: OECD Test Guideline 474
Result: negative

3-aminopropyltriethoxysilane**:**

Genotoxicity in vivo : Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative

Components:

bis(isopropyl)naphthalene**:**

Germ cell mutagenicity-Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Germ cell mutagenicity-Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Germ cell mutagenicity-Assessment : No data available

Carcinogenicity

No data available

Carcinogenicity - Assessment : No data available

Reproductive toxicity

Components:

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Effects on fertility : Test Type: Fertility
Species: Rat, male and female
Strain: wistar
Application Route: Ingestion
Dose: 100, 300 and 750 milligram per kilogram
General Toxicity - Parent: No observed adverse effect level: Measured 750 mg/kg body weight
General Toxicity F1: No observed adverse effect level: Measured 750 mg/kg body weight
Method: OECD Test Guideline 422
GLP: yes

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Species: Rat, male and female
Application Route: Oral
Dose: 10, 60, 120 mg/kg bw/day
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422
Remarks: No significant adverse effects were reported

Components:

bis(isopropyl)naphthalene**:**

Effects on foetal development : Species: Rat, female
Application Route: Oral
Dose: 100, 250, 625 mg/kg
Duration of Single Treatment: 20 d
Frequency of Treatment: 7 days/week
General Toxicity Maternal: Lowest observed adverse effect level: 250 mg/kg body weight
Teratogenicity: No observed adverse effect level: 625 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: 625 mg/kg body weight
Method: Directive 67/548/EEC, Annex V, B.31.
Result: No teratogenic effects

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Species: Rat, male and female
Strain: wistar
Application Route: Ingestion
Dose: 100, 300 and 750 milligram per kilogram
General Toxicity Maternal: No observed adverse effect level: Measured 300 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: Measured 750 mg/kg body weight
Method: OECD Test Guideline 422
GLP: yes

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 50 000 ppm
Result: No teratogenic effects

Components:

bis(isopropyl)naphthalene**:**

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

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure

Components:

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Exposure routes: Ingestion
Target Organs: Kidney
Assessment: No significant health effects observed at a concentration of 300mg/kg bw/day.

Repeated dose toxicity

Components:

bis(isopropyl)naphthalene**:**
Species: Rat, male and female
NOAEL: 170 mg/kg
Application Route: oral (feed)
Exposure time: 4 320 hNumber of exposures: 7 d
Dose: 170, 340, and 670 mg/kg
Method: Subchronic toxicity
Remarks: No significant adverse effects were reported

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**
Species: Rat, male and female
NOAEL: 300
Application Route: Ingestion
Exposure time: 43 - 44 DaysMethod: OECD Test Guideline 422

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**
Species: Rat, male and female
NOAEL: 10
Application Route: Ingestion
Exposure time: 13 WeeksNumber of exposures: Daily
Dose: 10, 60, 180mg/kg bw
Target Organs: Liver

Species: Rat, male and female
LOAEL: 60
Application Route: Ingestion
Exposure time: 13 WeeksNumber of exposures: Daily
Dose: 10, 60, 180mg/kg bw
Target Organs: Liver

2,4,6-Tris(dimethylaminomethyl)phenol**:**
Species: Rat, male and female
NOEL: 15 mg/kg
Application Route: Ingestion
Exposure time: 1 032 hNumber of exposures: 7 d

Method: Subacute toxicity

3-aminopropyltriethoxysilane**:**
Species: Rat, male and female
NOAEL: 200 mg/kg
Application Route: Ingestion
Exposure time: 2 160 hMethod: Subchronic toxicity

Components:

bis(isopropyl)naphthalene**:**

Repeated dose toxicity - Assessment	:	May be harmful if swallowed or if inhaled. No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

Components:

bis(isopropyl)naphthalene**:**
May be fatal if swallowed and enters airways.

Experience with human exposure

General Information:	No data available
Inhalation:	No data available
Skin contact:	No data available
Eye contact:	No data available
Ingestion:	No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion:	No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1 000 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae	:	EC50 (No information available.): > 1 000 mg/l Exposure time: 72 h Method: OECD Test Guideline 201

bis(isopropyl)naphthalene**:**

Toxicity to fish	:	LC50 : > 0,5 mg/l Exposure time: 96 h Test Type: semi-static test Method: Directive 67/548/EEC, Annex V, C.1. Remarks: No toxicity at the limit of solubility
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 0,16 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202 Remarks: No toxicity at the limit of solubility EL50 (Daphnia magna (Water flea)): 1,7 mg/l Exposure time: 48 h Test Type: semi-static test Method: OECD Test Guideline 202
Toxicity to algae	:	NOECr (Desmodesmus subspicatus (green algae)): ca. 0,15 mg/l Exposure time: 72 h Test Type: static test Method: DIN 38412 GLP: no Remarks: Aquatic toxicity is unlikely due to low solubility.
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,013 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
M-Factor (Chronic aquatic toxicity)	:	1

Ecotoxicology Assessment
Acute aquatic toxicity : No toxicity at the limit of solubility

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): Measured > 4,1 mg/l
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): Measured 48 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (algae)): Measured 4,1 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

ErC10 (Pseudokirchneriella subcapitata (algae)): Measured 0,11 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC10 (activated sludge): 38 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 174 mg/l
Exposure time: 48 h
Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31,5 mg/l
Exposure time: 24 h
Method: DIN 38412

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (algae)): 43,5 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

EC50 (Pseudokirchneriella subcapitata (algae)): 37,1 mg/l

Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 16 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50 (Pseudomonas putida): 89 mg/l
Exposure time: 17 h

Toxicity to fish (Chronic toxicity) : NOEC: 10,9 mg/l
Exposure time: 30 d
Species: Brachydanio rerio (zebrafish)
Method: OECD Test Guideline 210

Lowest Observed Effect Concentration: 10,9 mg/l
Exposure time: 30 d
Species: Brachydanio rerio (zebrafish)
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 1,02 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

Lowest Observed Effect Concentration: 1,02 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

Toxicity to soil dwelling organisms : NOEC: >= 1 000 mg/kg
Exposure time: 56 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222

EC50: >= 1 000 mg/kg
Exposure time: 56 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222

2,4,6-Tris(dimethylaminomethyl)phenol**:**

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 175 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates : LC50 : 718 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Marine water

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 84 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 6,25 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

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

3-aminopropyltriethoxysilane**:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 934 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)): 331 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 1 000 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.3.

Toxicity to microorganisms : EC50 (Pseudomonas putida): 43 mg/l
Exposure time: 5,75 h
Test Type: static test
Test substance: Fresh water

12.2 Persistence and degradability

Components:

2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated**:**

Biodegradability : Result: Not readily biodegradable.

bis(isopropyl)naphthalene**:**

Biodegradability : Inoculum: activated sludge
Concentration: 0,2 mg/l
Result: Not readily biodegradable.
Biodegradation: 30 - 35 %
Exposure time: 56 d
Method: OECD Test Guideline 310

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Biodegradability : Inoculum: Domestic sewage
Concentration: 100 mg/l

Result: Not readily biodegradable.
Biodegradation: 4 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): > 1 yr (25 °C)
pH: 4
Method: OECD Test Guideline 111

Degradation half life (DT50): > 1 yr (25 °C)
pH: 7
Method: OECD Test Guideline 111

Degradation half life (DT50): > 1 yr (25 °C)
pH: 9
Method: OECD Test Guideline 111

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**

Biodegradability : Inoculum: activated sludge
Concentration: 11,4 mg/l
Result: Not readily biodegradable.
Biodegradation: 7 %
Exposure time: 28 d

2,4,6-Tris(dimethylaminomethyl)phenol**:**

Biodegradability : Inoculum: activated sludge
Concentration: 2 mg/l
Result: Not biodegradable
Biodegradation: 4 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

3-aminopropyltriethoxysilane**:**

Biodegradability : Inoculum: activated sludge
Concentration: 8,95 mg/l
Result: Not readily biodegradable.
Biodegradation: 67 %
Exposure time: 28 d
Method: Directive 67/548/EEC Annex V, C.4.A.

12.3 Bioaccumulative potential

Components:

bis(isopropyl)naphthalene**:**

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 60 d
Bioconcentration factor (BCF): 770 - 6 400
Test substance: Fresh water
Method: flow-through test

Partition coefficient: n-octanol/water : log Pow: 6,081
Method: QSAR

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Partition coefficient: n-octanol/water	:	log Pow: -2,42

2,2,4(or 2,4,4)-Trimethylhexane-1,6-diamine**:**

Partition coefficient: n-octanol/water	:	log Pow: -0,3 (25 °C) Method: OECD Test Guideline 117

2,4,6-Tris(dimethylaminomethyl)phenol**:**

Partition coefficient: n-octanol/water	:	log Pow: 0,219 (21,5 °C) Method: OPPTS 830.7550

3-aminopropyltriethoxysilane**:**

Bioaccumulation	:	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 3,4 Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: 1,7 (20 °C) pH: 7

12.4 Mobility in soil

Components:

bis(isopropyl)naphthalene**:**

Distribution among environmental compartments	:	Koc: 36108 Method: QSAR

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..

Components:

Reaction mass of trientine and trientine, mono- and di-propoxylated**:**

Assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT)..

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 2735
14.2 UN proper shipping name	:	Polyamines, liquid, corrosive, n.o.s. (TRIMETHYLHEXAMETHYLENEDIAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
14.3 Transport hazard class(es)	:	8
14.4 Packing group	:	III
Labels	:	Corrosive
Packing instruction (cargo aircraft)	:	856
Packing instruction (passenger aircraft)	:	852

IMDG

14.1 UN number	:	UN 2735
14.2 UN proper shipping name	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIMETHYLHEXAMETHYLENEDIAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
14.3 Transport hazard class(es)	:	8
14.4 Packing group	:	III
Labels	:	8
EmS Code	:	F-A, S-B
14.5 Environmental hazards		
Marine pollutant	:	yes

ADR

14.1 UN number	:	UN 2735
14.2 UN proper shipping name	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIMETHYLHEXAMETHYLENEDIAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)
14.3 Transport hazard class(es)	:	8
14.4 Packing group	:	III
Labels	:	8
14.5 Environmental hazards		
Environmentally hazardous	:	yes

RID

14.1 UN number	:	UN 2735
14.2 UN proper shipping name	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S.

(TRIMETHYLHEXAMETHYLENEDIAMINE, DIISOPROPYLNAPHTHALENE ISOMERS)

14.3 Transport hazard class(es) : 8

14.4 Packing group : III

Labels : 8

14.5 Environmental hazards

Environmentally hazardous : yes

14.7 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). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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

REACH - List of substances subject to authorisation - Future sunset date : Not applicable

Water contaminating class (Germany) : WGK 3 highly hazardous to water

TA Luft List (Germany) :
Total dust:
Not applicable
: Inorganic substances in powdered form:
Not applicable
: Inorganic substances in vapour or gaseous form:
Not applicable
: Organic Substances:
Not applicable
: Carcinogenic substances:
Not applicable
: Mutagenic:
Not applicable
: Toxic to reproduction:
Not applicable

Other regulations:

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

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

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

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

NZIoC	:	Not 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), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
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.
H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Chronic aquatic toxicity
Asp. Tox.	:	Aspiration hazard
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation

Skin Sens. : Skin sensitisation

Further information

Classification of the mixture:		**Classification procedure:**
Skin Corr. 1A	H314	Calculation method
Eye Dam. 1	H318	Calculation method
Skin Sens. 1	H317	Calculation method
Aquatic Chronic 2	H411	Calculation method

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