

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2014-2 RESIN

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	03.06.2016	400001015910	Date of first issue: 03.06.2016

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

1.1 Product identifier

Trade name : ARALDITE® 2014-2 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 : 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 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.

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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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)

bisphenol F-epoxy resin

1,4-bis(2,3-epoxypropoxy)butane

bis(2,3-epoxypropyl) terephthalate

Additional Labelling:

EUH205 Contains epoxy constituents. May produce an allergic reaction.

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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)
Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	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.

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- 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.

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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

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technological safety standards.

Advice on common storage : Strong acids
Strong bases
Strong oxidizing agents

Storage class (TRGS 510) : 10, Combustible liquids

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
reaction product: bisphenol-A- (epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)	Workers	Dermal	Systemic effects, Short-term exposure	8,33 mg/kg bw/day
	Workers	Inhalation	Systemic effects, Short-term exposure	12,25 mg/m3
	Workers	Dermal	Systemic effects, Long-term exposure	8,33 mg/kg bw/day
	Workers	Inhalation	Systemic effects, Long-term exposure	12,25 mg/m3
	Consumers	Dermal	Systemic effects, Short-term exposure	3,571 mg/kg bw/day
	Consumers	Oral	Systemic effects, Short-term exposure	0,75 mg/kg bw/day
	Consumers	Dermal	Systemic effects, Long-term exposure	3,571 mg/kg bw/day
	Consumers	Oral	Systemic effects, Long-term exposure	0,75 mg/kg bw/day
bis(2,3-epoxypropyl) terephthalate	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

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	Consumers	Inhalation	Systemic effects, Long-term exposure	3,5 mg/m ³
	Consumers	Oral	Systemic effects, Long-term exposure	1 mg/kg bw/day
tris(oxiranylmethyl) benzene-1,2,4- tricarboxylate	Workers	Dermal	Systemic effects, Long-term exposure	1,25 mg/kg 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/m ³
	Workers	Inhalation	Systemic effects, Long-term exposure	8,75 mg/m ³
	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
reaction product: bisphenol-A- (epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)	Fresh water	0,006 mg/l
Remarks:	Assessment Factors	
	Marine water	0,0006 mg/l
	Assessment Factors	
	Freshwater - intermittent	0,018 mg/l
	Assessment Factors	
	Fresh water sediment	0,996 mg/kg
	Equilibrium method	
	Marine sediment	0,0996 mg/kg
	Equilibrium method	
	Soil	0,196 mg/kg
	Equilibrium method	
	Sewage treatment plant	10 mg/l
	Assessment Factors	
	Secondary Poisoning	11 mg/kg
bis(2,3-epoxypropyl) terephthalate	Fresh water	0,00294 mg/l
	Assessment Factors	
	Marine water	0,00029 mg/l
	Assessment Factors	
	Freshwater - intermittent	0,0294 mg/l

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	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	
tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate	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

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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

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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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700):

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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.

1,4-bis(2,3-epoxypropoxy)butane:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

bis(2,3-epoxypropyl) terephthalate:
Species: Rabbit
Assessment: Mild skin irritant
Result: Normally reversible injuries

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation

Components:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):
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

1,4-bis(2,3-epoxypropoxy)butane:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.

bis(2,3-epoxypropyl) terephthalate:
Species: Rabbit
Assessment: Corrosive
Result: Irreversible effects on the eye

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
Species: Rabbit
Assessment: Irritant
Method: OECD Test Guideline 405

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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.

bis(2,3-epoxypropyl) terephthalate:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Causes sensitisation.

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Causes sensitisation.

Assessment: No data available

Germ cell mutagenicity

Components:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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

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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

1,4-bis(2,3-epoxypropoxy)butane:
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

bis(2,3-epoxypropyl) terephthalate:
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

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
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:

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reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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

1,4-bis(2,3-epoxypropoxy)butane:

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

bis(2,3-epoxypropyl) terephthalate:

Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 483
Result: negative

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

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:

Genotoxicity in vivo : Application Route: Oral
Method: OECD Test Guideline 483
Result: negative

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

Components:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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

1,4-bis(2,3-epoxypropoxy)butane:

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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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)

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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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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

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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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion

Exposure time: 14 Weeks Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOEL: 10 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks Number of exposures: 5 d

Method: Subchronic toxicity

Species: Mouse, male

NOAEL: 100 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks Number 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 Weeks Number of exposures: 7 d

Method: Subchronic toxicity

1,4-bis(2,3-epoxypropoxy)butane:

Species: Rat, male and female

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NOAEL: 200 mg/kg
Application Route: Ingestion
Exposure time: 28 d Number of exposures: 7 d
Method: Subacute toxicity

bis(2,3-epoxypropyl) terephthalate:
Species: Rat, male and female
NOAEL: > 240 mg/kg
Application Route: Ingestion
Exposure time: 672 h Number of exposures: 7 d
Method: Subacute toxicity

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
Species: Rat, male
NOAEL: 150
Application Route: Ingestion
Exposure time: 672 h Number of exposures: 7 d
Method: Subacute toxicity

Species: Rat, female
NOAEL: \geq 500
Application Route: Ingestion
Exposure time: 672 h Number 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

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Neurological effects

No data available

Further information

Ingestion: No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

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 : EC50 (Daphnia magna (Water flea)): 1,6 mg/l

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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

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:

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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700):

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

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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.

1,4-bis(2,3-epoxypropoxy)butane:

Biodegradability

: Inoculum: activated sludge

Concentration: 20 mg/l

Result: Not readily biodegradable.

Biodegradation: 43 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

bis(2,3-epoxypropyl) terephthalate:

Stability in water

: Degradation half life (DT50): 118,26 hrs (20 °C) pH: 7

Method: OECD Test Guideline 111

GLP: yes

Remarks: Fresh water

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:

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:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700):

Bioaccumulation : Bioconcentration factor (BCF): 31

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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

1,4-bis(2,3-epoxypropoxy)butane:
Partition coefficient: n-octanol/water : log Pow: -0,269 (25 °C)
pH: 6,7
Method: OECD Test Guideline 117

bis(2,3-epoxypropyl) terephthalate:
Partition coefficient: n-octanol/water : log Pow: 1,7 (25 °C)
Method: OECD Test Guideline 117
GLP: yes

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
Partition coefficient: n-octanol/water : log Pow: 0,9 (25 °C)
Method: OECD Test Guideline 117

12.4 Mobility in soil

Components:

reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700):

Distribution among environmental compartments : Koc: 445

bisphenol F-epoxy resin:
Distribution among environmental compartments : Koc: 4460 Method: OECD Test Guideline 121

1,4-bis(2,3-epoxypropoxy)butane:
Distribution among environmental compartments : Koc: 12,59 Method: OECD Test Guideline 121

bis(2,3-epoxypropyl) terephthalate:
Distribution among environmental compartments : Koc: 2 Method: OECD Test Guideline 121

tris(oxiranylmethyl) benzene-1,2,4-tricarboxylate:
Distribution among environmental compartments : Koc: 251 Method: OECD Test Guideline 121

12.5 Results of PBT and vPvB assessment

Product:

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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

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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

Water contaminating class (Germany) : WGK 2 water endangering

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

TSCA : Not On TSCA Inventory

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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), NZIOIC (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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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : ARALDITE® 2014-2 HARDENER

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

Use of the Substance/Mixture : Adhesives

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA
Address : Everslaan 45
3078 Everberg
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40
E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Emergency telephone number : 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 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.

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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.
H318 Causes serious eye damage.
H317 May cause an allergic skin reaction.
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:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.

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

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

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.

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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 and triethylenetetramine	68154-62-1 01-2119972322-40	Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1A; H317 Aquatic Chronic 2; H411	30 - 60
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25513-64-8 247-063-2	Acute Tox. 4; H302 Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1A; H317	7 - 13
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	Acute Tox. 4; H302 Skin Corr. 1A; H314 Skin Sens. 1B; H317	3 - 7

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- If inhaled : Move to fresh air.
Keep patient warm and at rest.
If symptoms persist, call a physician.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Seek medical advice.
- If swallowed : Rinse mouth with water.
Do NOT induce vomiting.
Consult a physician if necessary.

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 : None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not use a solid water stream as it may scatter and spread fire.
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 : In the event of fire, wear self-contained breathing apparatus.

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.
Ensure adequate ventilation.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Do not allow contact with soil, surface or ground water.

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

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Technical measures : Ensure that eyewash stations and safety showers are close to the workstation location.
- Local/Total ventilation : Ensure adequate ventilation.
- Advice on safe handling : Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or 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 containers tightly closed in a cool, well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- 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

8.2 Exposure controls

Engineering measures

Maintain air concentrations below occupational exposure standards.

Personal protective equipment

- Eye protection : Safety glasses
- 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

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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 : Protective suit

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 : black

Odour : amine-like

Boiling point : > 200 °C

Flash point : > 100 °C
Method: closed cup

Vapour pressure : 0,001 hPa

Density : ca. 1,6 g/cm³

Solubility(ies)
Water solubility : insoluble (20 °C)

Auto-ignition temperature : > 200 °C

Decomposition temperature : > 200 °C

Viscosity
Viscosity, dynamic : 75 - 150 Pas (20 °C)
Method: DIN Method, other

9.2 Other information

No data available

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SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under normal conditions.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : Strong acids and strong bases
Strong oxidizing agents

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Components:

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

Acute oral toxicity : LD50 (Rat, female): > 2.000 mg/kg
Method: OECD Test Guideline 423

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Acute oral toxicity : LD50 (Rat): 910 mg/kg
Method: OECD Test Guideline 401

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

Acute oral toxicity : LD50 (Rat, male and female): 1.669 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : No data available

Components:

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

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg

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Method: OECD Test Guideline 402

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
Acute dermal toxicity : LD50 (Rabbit): 1.310 mg/kg

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

Skin corrosion/irritation

Product:

Species: reconstructed human epidermis (RhE)
Method: OECD Test Guideline 435
Result: Non-corrosive
GLP: yes

Serious eye damage/eye irritation

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:
Species: Rabbit
Assessment: Severe eye irritation
Method: OECD Test Guideline 405
Result: Irritating to eyes.

Species: Other
Assessment: May cause eye and skin irritation.
Method: OECD Test Guideline 437
Result: May cause eye and skin irritation.

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

polyamide resin:
Assessment: Irritating to eyes.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
Assessment: Severe eye irritation
Result: Corrosive

Respiratory or skin sensitisation

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Causes sensitisation.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

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

polyamide resin:
Assessment: May cause sensitisation by skin contact.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: The product is a skin sensitiser, sub-category 1B.

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

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:
Genotoxicity in vitro : Test Type: Ames test
Test species: 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 species: 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 species: Chinese hamster ovary cells
Concentration: 2 mg/ml

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

Components:

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

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

Carcinogenicity - Assessment : No data available

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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.

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.

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.

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Effects on foetal development : Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 50.000 ppm
Result: No teratogenic effects

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

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.

Components:

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

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

STOT - single exposure

No data available

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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 Weeks Number of exposures: 7 d

Method: Subacute toxicity

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species: Rat, male and female

NOAEL: 10

Application Route: Ingestion

Exposure time: 13 Weeks Number 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 Weeks Number of exposures: Daily

Dose: 10, 60, 180mg/kg bw

Target Organs: Liver

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

Species: Rat, male and female

: 550

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 3 Weeks Number of exposures: 7 d

Method: Subchronic toxicity

Species: Mouse, male

NOAEL: >= 56,3

Application Route: Skin contact

Exposure time: 20 h Number of exposures: 3 d

Method: Chronic toxicity

Repeated dose toxicity - : No data available
Assessment

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

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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

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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 bacteria : 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

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Species: Eisenia fetida (earthworms)

Method: OECD Test Guideline 222

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.

12.2 Persistence and degradability

Components:

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

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

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

12.3 Bioaccumulative potential

Components:

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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

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

12.4 Mobility in soil

No data available

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 : Can be landfilled or incinerated, when in compliance with local regulations.
Where possible recycling is preferred to disposal or incineration.
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) : 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)
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 : Not applicable

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(Annex XIV)

Water contaminating class : WGK 2 water endangering
(Germany)

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

TSCA : On TSCA 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 : Not in compliance with the inventory

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

Inventories

AICS (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOOC (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.
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.
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

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Eye Irrit.	: Eye irritation
Skin Corr.	: Skin corrosion
Skin Irrit.	: Skin irritation
Skin Sens.	: Skin sensitisation

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