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ARALDITE® STANDARD ULTRA RESIN

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1.1 Product identifier	
Trade name	: ARALDITE® STANDARD ULTRA RESIN
1.2 Relevant identified uses of th	e 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 Address	 HUNTSMAN ADVANCED MATERIALS (UK) LIMITED Ickleton Road, Duxford, Cambridgeshire CB22 4XQ United Kingdom
Telephone	: +41 61 299 20 41
E-mail address of person responsible for the SDS	: Global_Product_EHS_AdMat@huntsman.com
1.4 Emergency telephone numbe	r
Emergency telephone number	: EUROPE: +32 35 75 1234 France ORFILA: +33(0)145425959 ASIA: +65 6336-6011 China: +86 20 39377888

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

+86 532 83889090 India: + 91 22 42 87 5333 Australia: 1800 786 152 New Zealand: 0800 767 437 USA: +1 800-424-9300

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.



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2.2 Label elements

Signal word

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms



Hazard statements :	H315 H317 H319 H411	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Toxic to aquatic life with long lasting effects.
Precautionary statements :	P101 P102 P103	If medical advice is needed, have product container or label at hand. Keep out of reach of children. Read carefully and follow all instructions.
	Prevention	:
	P273 P280	Avoid release to the environment. Wear protective gloves/ eye protection/ face protection.
	Response:	
	P391	Collect spillage.
	Disposal:	
	P501	Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Hazardous components which must be listed on the label:

bis-[4-(2,3-epoxipropoxi)phenyl]propane Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane bisphenol A - epoxy resins, number average MW >700 - <1100

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. Classification Cor	ncent
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	EC-No. Index-No. Registration number		ration (% w/w)
bis-[4-(2,3- epoxipropoxi)phenyl]propane	1675-54-3 216-823-5 603-073-00-2	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411 specific concentration limit Eye Irrit. 2; H319 >= 5 % Skin Irrit. 2; H315 >= 5 %	>= 70 - < 90
Reaction mass of 2,2'- [methylenebis(2,1- phenyleneoxymethylene)]bis(oxir ane) and 2,2'-[methylenebis(4,1- phenyleneoxymethylene)]bis(oxir ane) and 2-({2-[4-(oxiran-2- ylmethoxy)benzyl]phenoxy}meth yl)oxirane	-	Skin Irrit. 2; H315 Skin Sens. 1A; H317 Aquatic Chronic 2; H411	>= 2.5 - < 10
bisphenol A - epoxy resins, number average MW >700 - <1100	25068-38-6 Polymer	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317	>= 1 - < 10
Substances with a workplace expe			
Silica, amorphous, fumed, cryst free	-		>= 1 - < 10

For explanation of abbreviations see section 16.

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing If potential for exposure exists refer to Section 8 for specific personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
If inhaled	:	If inhaled, remove to fresh air.

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		Get medical	attention if symptoms occur.
In cas	se of skin contact	lf on skin, rir	on persists, call a physician. nse well with water. , remove clothes.
In cas	se of eye contact	Remove cor Keep eye w	flush eye(s) with plenty of water. ntact lenses. ide open while rinsing. on persists, consult a specialist.
lf swa	allowed	Never give a	atory tract clear. anything by mouth to an unconscious person. persist, call a physician.
4.2 Most i	important symptoms	and effects, both	acute and delayed
Risks	3		i irritation. an allergic skin reaction. ous eye irritation.
4.3 Indica	tion of any immediat	e medical attentio	n and special treatment needed
Treat	ment	: Treat sympt	omatically.
SECTION	L E. Eirofighting ma		
	N 5: Firefighting me	asules	
	guishing media ble extinguishing medi	a : Water spray Alcohol-resi	

		Dry chemical
Unsuitable extinguishing	:	Exercise caution when using a high volume water jet as it may

Carbon dioxide (CO2)

scatter and spread fire

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.	
Hazardous combustion products	: Carbon oxides Phenolics	
5.3 Advice for firefighters		

Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Further information	:	Collect contaminated fire extinguishing water separately. This

media



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must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures				
Personal precautions	:	Use personal protective equipment.		
		Refer to protective measures listed in sections 7 and 8.		
6.2 Environmental precautions				
Environmental precautions	:	Prevent product from entering drains.		
		Prevent further leakage or spillage if safe to do so.		
		If the product contaminates rivers and lakes or drains inform respective authorities.		
C.O. Matheada and matarial far as m				
6.3 Methods and material for con	Ital	•		
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel,		

	0 1
Methods for cleaning up	: Soak up with inert absorbent material (e.g. sand, silication
	acid binder, universal binder, sawdust).
	Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
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.

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7.2 Conditions for safe storage, including any incompatibilities

1.2 Contaitions for sale storage,	me	idening any meenipationness
Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers.
Advice on common storage	:	For incompatible materials please refer to Section 10 of this SDS.
Recommended storage temperature	:	2 - 40 °C
Further information on storage stability	:	Stable under normal conditions.
7.3 Specific end use(s) Specific use(s)	:	No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Silica, amorphous, fumed, crystfree	112945-52- 5	TWA (inhalable dust)	6 mg/m3 (Silica)	GB EH40
		TWA (Respirable dust)	2.4 mg/m3 (Silica)	GB EH40

Derived No Effect Level (DNEL)

Substance name	End Use	Exposure routes	Potential health effects	Value
bis-[4-(2,3- epoxipropoxi)phenyl]p ropane	Workers	Inhalation	Long-term systemic effects	4.93 mg/m3
	Workers	Dermal	Long-term systemic effects	0.75 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.87 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.0893 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0.5 mg/kg bw/day
bisphenol A - epoxy resins, number average MW >700 - <1100	Workers	Dermal	Systemic effects	
	Workers	Inhalation	Systemic effects	12.25 mg/m3
	Workers	Dermal	Systemic effects	



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	Workers	Inhalation	Systemic effects	12.25 mg/m3
	Consumers	Dermal	Systemic effects	
	Consumers	Oral	Systemic effects	
	Consumers	Dermal	Systemic effects	
	Consumers	Oral	Systemic effects	
bis(2-ethylhexyl) adipate	Workers	Inhalation	Long-term systemic effects	17.8 mg/m3
	Workers	Dermal	Long-term systemic effects	25.5 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	4.4 mg/m3
	Consumers	Dermal	Long-term systemic effects	13 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	1.7 mg/kg bw/day
Reaction mass of 2,2'- [methylenebis(2,1- phenyleneoxymethyle ne)]bis(oxirane) and 2,2'- [methylenebis(4,1- phenyleneoxymethyle ne)]bis(oxirane) and 2-({2-[4-(oxiran-2- ylmethoxy)benzyl]phe noxy}methyl)oxirane	Workers	Dermal	Acute local effects	0.0083 mg/cm2
	Workers	Dermal	Long-term systemic effects	104.15 mg/kg
	Workers	Inhalation	Long-term systemic effects	29.39 mg/m3
	Consumers	Dermal	Long-term systemic effects	62.5 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	8.7 mg/m3
	Consumers	Oral	Long-term systemic effects	6.25 mg/kg bw/day
Silica, amorphous, fumed, crystfree	Workers	Inhalation	Long-term systemic effects	4 mg/m3
reaction product: bisphenol a- (epichlorhydrin); epoxy resin (number average molecular weight > 1100)	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,	0.75 mg/kg



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		Short-term exposure	bw/day
Consume	ers Dermal	Systemic effects,	3.571 mg/kg
		Long-term exposure	bw/day
Consume	ers Oral	Systemic effects,	0.75 mg/kg
		Long-term exposure	bw/day

Predicted No Effect Concentration (PNEC)

Substance name	Environmental Compartment	Value
25068-38-6	Fresh water	0.006 mg/l
	Remarks: Assessment Factors	
	Marine water	0.0006 mg/l
	Remarks: Assessment Factors	
	Freshwater - intermittent	0.018 mg/l
	Remarks: Assessment Factors	
	Fresh water sediment	0.996 mg/kg
	Remarks:Equilibrium method	
	Marine sediment	0.0996 mg/kg
	Remarks:Equilibrium method	
	Soil	0.196 mg/kg
	Remarks:Equilibrium method	
	Sewage treatment plant	10 mg/l
	Remarks: Assessment Factors	
	Secondary Poisoning	11 mg/kg

8.2 Exposure controls

Personal protective equipme	ent	
Eye/face protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Hand protection Material Break through time	:	butyl-rubber > 8 h
Material	:	Solvent-resistant gloves (butyl-rubber)
Material Break through time	:	Nitrile rubber 10 - 480 min
Material	:	Neoprene gloves
Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	:	Use respiratory protection unless adequate local exhaust



рН	: 6 Concentration: 500 g/l
Viscosity	: No data is available on the pro
Solubility(ies) Water solubility	: practically insoluble
Solubility in other solvents	: No data is available on the pro
Destition of fisients	. No data is suchable on the suc

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	ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Equipment should conform to EN 14387	
Filter type	: Combined particulates and organic vapour type (A-P)	

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : liquid	
Colour : light cream	
Odour : slight	
Odour Threshold : No data is available on the product its	elf.
Melting point/freezing point : No data is available on the product its	elf.
Boiling point : No data is available on the product its	elf.
Flammability (solid, gas) : No data is available on the product its	elf.
Lower explosion limit / Lower : No data is available on the product its flammability limit	elf.
Upper explosion limit / Upper : No data is available on the product its flammability limit	elf.
Flash point : 210 °C Method: Pensky-Martens closed cup	
Auto-ignition temperature : No data is available on the product its	elf.
Decomposition temperature : No data is available on the product its	elf.
pH : 6 Concentration: 500 g/l	
Viscosity : No data is available on the product its	elf.
Solubility(ies) Water solubility : practically insoluble	
Solubility in other solvents : No data is available on the product its	elf.
Partition coefficient: n- : No data is available on the product its octanol/water	elf.



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Vapou	ir pressure	: 0.0001 kPa	

: 1.15 g/cm3 (25 °C)

Relative density	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Particle characteristics	: No data is available on the product itself.

9.2 Other information

Density

No data is available on the product itself.

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : None known.

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

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

Acute toxicity

Not classified due to lack of data.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Acute oral toxicity	 LD50 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 420 Assessment: The substance or mixture has no acute oral toxicity Remarks: No mortality observed at this dose.
Acute dermal toxicity	: LD50 (Rat, male and female): > 2,000 mg/kg



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			D Test Guideline 402 The substance or mixture has no acute dermal		
[meth		neoxymethylene)]bis(eneoxymethylene)]bis(oxirane) and 2,2'- oxirane) and 2-({2-[4-(oxiran-2-		
Acute	e oral toxicity		ale and female): > 5,000 mg/kg D Test Guideline 401		
Acute dermal toxicity		Method: OEC	LD50 (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity		
bisph	nenol A - epoxy resin	s. number average	MW >700 - <1100:		
•	oral toxicity	: LD50 (Rat, fer Method: OEC	male): > 2,000 mg/kg D Test Guideline 420 The substance or mixture has no acute oral		
Acute	e dermal toxicity	Method: OEC	ale and female): > 2,000 mg/kg D Test Guideline 402 The substance or mixture has no acute dermal		
Silica	, amorphous, fumed	, crystfree:			
	oral toxicity	: LD50 (Rat): >	5,000 mg/kg D Test Guideline 401		
Acute	inhalation toxicity	Exposure time Test atmosph	ale and female): > 58.8 mg/l e: 4 h ere: dust/mist D Test Guideline 403		
Acute	e dermal toxicity	: LD50 (Rabbit)): > 5,000 mg/kg		
	corrosion/irritation es skin irritation.				
	oonents:				
		henyl]propane:			
Species : Exposure time : Assessment : Method :		: Rabbit : 4 h : Irritating to sk : OECD Test G	Guideline 404		

: Irritating to skin.

Result



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Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Irritating to skin.

bisphenol A - epoxy resins, number average MW >700 - <1100:

Method	:	OECD Test Guideline 404
Result	:	Skin irritation

Silica, amorphous, fumed, cryst.-free:

Rabbit
No skin irritation
OECD Test Guideline 404
No skin irritation
:

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Species :	Rabbit
Assessment :	Irritating to eyes.
Method :	OECD Test Guideline 405
Result :	Irritating to eyes.

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	No eye irritation

bisphenol A - epoxy resins, number average MW >700 - <1100:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Eye irritation

Silica, amorphous, fumed, cryst.-free:

Species :	Rabbit
Assessment :	No eye irritation
Method :	OECD Test Guideline 405
Result :	No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

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Respiratory sensitisation

Not classified due to lack of data.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Test Type :	Local lymph node assay (LLNA)
Exposure routes :	Skin
Species :	Mouse
Method :	OECD Test Guideline 429
Result :	The product is a skin sensitiser, sub-category 1B.

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane:

Test Type :	:	Local lymph node assay (LLNA)
Exposure routes :	:	Skin
Species :	:	Mouse
Method :	:	OECD Test Guideline 429
Result :	:	The product is a skin sensitiser, sub-category 1A.

bisphenol A - epoxy resins, number average MW >700 - <1100:

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

Germ cell mutagenicity

Not classified due to lack of data.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Genotoxicity in vitro	: Test Type: In vitro mammalian cell gene mutation test Test system: mouse lymphoma cells Metabolic activation: without metabolic activation Result: positive
	Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Result: negative
Genotoxicity in vivo	 Test Type: in vivo assay Species: Mouse (male) Cell type: Germ Application Route: Oral Dose: 3333, 10000 mg/kg Result: negative Test Type: gene mutation test Species: Rat (male)



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			ute: Oral 500,1000 mg/kg bw/day) Test Guideline 488
[meth		neoxymethylene)]bis(o	neoxymethylene)]bis(oxirane) and 2,2'- xirane) and 2-({2-[4-(oxiran-2-
-	otoxicity in vitro	: Metabolic activ	vation: with and without metabolic activation D Test Guideline 471 e
			vation: with and without metabolic activation D Test Guideline 473 e
			vation: with and without metabolic activation D Test Guideline 476 e
Genc	otoxicity in vivo	: Cell type: Som Application Ro Exposure time Dose: 2000 mg Method: OECE Result: negativ	ute: Oral : 48 h g/kg D Test Guideline 474
		Cell type: Som Application Ro Dose: 2000 mg Method: OECE Result: negativ	ute: Oral g/kg D Test Guideline 486
bispl	henol A - epoxy resi	ns, number average N	/₩ >700 - <1100:
-	otoxicity in vitro	: Metabolic activ Method: OECE	vation: with and without metabolic activation D Test Guideline 476 e results were obtained in some in vitro tests.
			vation: with and without metabolic activation D Test Guideline 471 ve
Genc	otoxicity in vivo	: Cell type: Gerr Application Ro Method: OECL Result: negativ	ute: Oral D Test Guideline 478
		Cell type: Som Application Ro Dose: 0 - 5000 Method: OPPT	ute: Oral) mg/kg



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	Dose: 50,250,500,1000 mg/kg bw/day Method: OECD Test Guideline 488 Result: negative
	ethylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'- eneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2- y}methyl)oxirane:
Genotoxicity in vitro	: Metabolic activation: with and without metabolic activati Method: OECD Test Guideline 471 Result: positive
	Metabolic activation: with and without metabolic activati Method: OECD Test Guideline 473 Result: positive
	Metabolic activation: with and without metabolic activati Method: OECD Test Guideline 476 Result: positive
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
bisphenol A - epoxy res	ins, number average MW >700 - <1100:
Genotoxicity in vitro	 Metabolic activation: with and without metabolic activati Method: OECD Test Guideline 476 Result: Positive results were obtained in some in vitro te
	Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	: Cell type: Germ Application Route: Oral Method: OECD Test Guideline 478 Result: negative

Method: OPPTS 870.5395 Result: negative

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Silica, amorphous, fumed, cryst.-free:

Genotoxicity in vitro	:	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
		Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	:	Application Route: Inhalation Dose: 50 mg/m3 Result: negative

Carcinogenicity

Not classified due to lack of data.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Species Application Route Exposure time Dose Frequency of Treatment NOAEL Method Result Target Organs	 Rat, male Oral 24 month(s) 0, 2, 15, or 100 mg/kg bw/day 7 days/week 15 mg/kg bw/day OECD Test Guideline 453 negative Digestive organs
Species Application Route Exposure time Dose Frequency of Treatment NOEL Method Result Target Organs	 Mouse, male Dermal 24 month(s) 0, 0.1, 10, 100 mg/kg bw/day 3 days/week 0.1 mg/kg body weight OECD Test Guideline 453 negative Digestive organs
Species Application Route Exposure time Dose Frequency of Treatment NOEL Method Result	 Rat, female Dermal 24 month(s) 0.1, 100, 1000 mg/kg bw/day 5 days/week 100 mg/kg body weight OECD Test Guideline 453 negative
Species Application Route Exposure time	: Rat, female : Oral : 24 month(s)



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Dose	:	0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	:	7 days/week
NOAEL	:	100 mg/kg bw/day
Method	:	OECD Test Guideline 453
Result	:	negative
Target Organs	:	Digestive organs
Species	:	Rat, females
Application Route	:	Oral
Exposure time	:	24 month(s)
Dose	:	0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	:	7 days/week
NOEL	:	2 mg/kg bw/day
Method	:	OECD Test Guideline 453
Result	:	negative
Target Organs	:	Digestive organs

bisphenol A - epoxy resins, number average MW >700 - <1100:

Species Application Route	:	Rat, male and female Oral
Exposure time	:	24 month(s)
Dose	:	15 mg/kg
Frequency of Treatment	:	7 daily
Method	:	OECD Test Guideline 453
Result	:	negative

Silica, amorphous, fumed, cryst.-free:

Species	:	Rat, male and female
Application Route	:	Oral
Exposure time	:	103 weeks
Dose	:	1800 - 3200 mg/kg
Frequency of Treatment	:	7 daily
Method	:	OECD Test Guideline 453
Result	:	negative

Reproductive toxicity

Not classified due to lack of data.

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

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



Effects on foetal development	 Species: Rabbit, female Application Route: Dermal Dose: 0, 30, 100 or 300 milligram per kilogram Duration of Single Treatment: 28 d Frequency of Treatment: 1 daily General Toxicity Maternal: NOAEL: 30 mg/kg body weight Developmental Toxicity: NOAEL: 300 mg/kg body weight Method: Other guidelines Result: No teratogenic effects
	Test Type: Pre-natal Species: Rabbit, female Application Route: Oral Dose: 0, 20, 60 or 180 milligram per kilogram Duration of Single Treatment: 13 d Frequency of Treatment: 1 daily General Toxicity Maternal: NOAEL: 60 mg/kg body weight Developmental Toxicity: NOAEL: 180 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
	Test Type: Pre-natal Species: Rat, female Application Route: Oral Dose: 0, 60, 180 and 540 milligram per kilogram Duration of Single Treatment: 10 d Frequency of Treatment: 1 daily General Toxicity Maternal: NOAEL: 180 mg/kg body weight Developmental Toxicity: NOAEL: > 540 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
	/lenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'- oxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2- nethyl)oxirane:
Effects on fertility	 Test Type: Two-generation study Species: Rat, male and female Application Route: Oral Dose: 0, 50, 180, 540 or 750 mg/kg/ Duration of Single Treatment: 238 d General Toxicity - Parent: NOEL: 750 General Toxicity F1: NOEL: 750 mg/kg body weight General Toxicity F2: NOAEL: 750 mg/kg body weight Method: OECD Test Guideline 416 Result: No effects on fertility and early embryonic development were detected. GLP: yes Remarks: Information given is based on data obtained from similar substances.
	, number average MW >700 - <1100:
Effects on fertility	: Species: Rat, male and female Application Route: Oral General Toxicity - Parent: NOEL: 750 mg/kg body weight
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Species : Rat, male and female NOAEL 50 mg/kg 1

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		Method: OECD	ty F1: NOEL: 750 mg/kg body weigh) Test Guideline 416 cts on fertility and early embryonic vere detected.
	ts on foetal lopment	: Species: Rabb Application Ro General Toxici Method: Other Result: No tera	ute: Dermal ty Maternal: NOAEL: 30 mg/kg body guidelines

Species: Rabbit, female **Application Route: Oral** General Toxicity Maternal: NOAEL: 60 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects Species: Rat, female

Maternal: NOAEL: 30 mg/kg body weight

Application Route: Oral General Toxicity Maternal: NOAEL: 180 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects

Silica, amorphous, fumed, cryst.-free:

Effects on foetal : development	Species: Mouse Application Route: Oral General Toxicity Maternal: NOAEL: 1,340 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
	Species: Rabbit Application Route: Oral General Toxicity Maternal: NOAEL: 1,600 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
	Species: Rat Application Route: Oral General Toxicity Maternal: NOAEL: 1,350 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
STOT - single exposure Not classified due to lack of data.	
STOT - repeated exposure Not classified due to lack of data.	
Repeated dose toxicity	
Components:	
bis-[4-(2,3-epoxipropoxi)phenyl]propane:

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Number of exposures

Dose

Method

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	cation Route	: oral (gavage) : 14 Weeks	
	sure time	: 7 d	
Dose		: 0, 50, 250, 100 : OECD Test Gu	
Expo	EL cation Route sure time per of exposures	 Rat, male and f >= 10 mg/kg Skin contact 13 Weeks 5 d 0, 10, 100, 100 OECD Test Gu 	0 mg/kg/day
		: Mouse, male : 100 mg/kg : Skin contact : 13 Weeks	

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane:

: 0, 1, 10, 100 mg/kg/day

OECD Test Guideline 411

Species	:	Rat, male and female
NOAEL	:	250 mg/kg
Application Route	:	Ingestion
Exposure time	:	13 Weeks
Number of exposures	:	7 d
Method	:	Subchronic toxicity

bisphenol A - epoxy resins, number average MW >700 - <1100:

: 3 d

:

Species NOAEL Application Route Exposure time Number of exposures Method		Rat, male and female 50 mg/kg Ingestion 14 Weeks 7 d Subchronic toxicity
Species NOEL Application Route Exposure time Number of exposures Method	-	Rat, male and female 10 mg/kg Skin contact 13 Weeks 5 d Subchronic toxicity

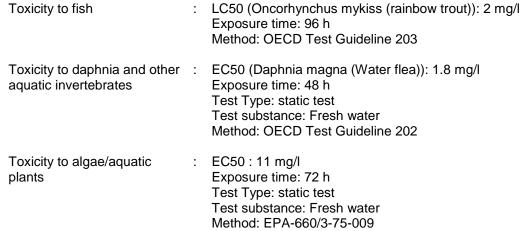
Silica, amorphous, fumed, cryst.-free:

Species	:	Rat, male and female
NOAEL	:	7950 - 8980 mg/kg
Application Route	:	Ingestion
Exposure time	:	4,320 h
Number of exposures	:	7 d



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Meth	od	: Subchronic toxic	ity	
Test Expo	C cation Route atmosphere sure time per of exposures	 Rat, male and fe 4000 - 4500 mg/ Ingestion dust/mist 13 Weeks 7 d OECD Test Guid 	/m3	
Aspi	ration toxicity			
-	lassified due to lack of	f data.		
11.2 Infor	mation on other haza	ards		
Endo	crine disrupting pro	perties		
<u>Prod</u>	uct:			
Asse	ssment	: This substance/mixture does not contain components considered to have endocrine disrupting properties for human health according to UK REACH Article 57(f),		
-	rience with human e ata available	xposure		
	cology, Metabolism, ata available	Distribution		
Neur	ological effects			
No da	ata available			
Further information				
No da	ata available			
SECTION	N 12: Ecological inf	iormation		
12.1 Toxic	city			
Com	ponents:			
bis-[4	4-(2,3-epoxipropoxi)p	ohenyl]propane:		
Toxic	ity to fish	: LC50 (Oncorhyn	chus mykiss (rainbow trout)): 2 mg/l	





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		NOEC : 4.2 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: EPA-660/3-75-009
Toxicity to microorganisms	:	IC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water
oxicity to daphnia and other equatic invertebrates Chronic toxicity)	:	NOEC: 0.3 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
Ecotoxicology Assessment		
Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting effects.
	oxyr	bis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'- nethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2- l)oxirane:
Toxicity to fish	:	LC50 (Fish): 2.54 mg/l Exposure time: 96 h Test substance: Fresh water Method: Calculation method
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2.55 mg/l Exposure time: 48 h Method: Calculation method
Foxicity to algae/aquatic blants	:	EC50 (Selenastrum capricornutum (green algae)): > 1.8 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Test substance: Fresh water Method: OECD Test Guideline 201 GLP: no
Toxicity to microorganisms	:	IC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Analytical monitoring: no Test substance: Fresh water GLP: no
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0.3 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: semi-static test Analytical monitoring: no



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		Method: OECI GLP: yes	e: Fresh water D Test Guideline 211 rmation given is based on data obtained from nces.
bisph	enol A - epoxy resins,	number average I	MW >700 - <1100:
Toxici	ty to fish	Exposure time Test Type: sta Test substanc	
	ty to daphnia and other c invertebrates	Exposure time Test Type: sta Test substanc	
Toxici plants	ty to algae/aquatic	mg/l Exposure time	astrum capricornutum (green algae)): > 100 :: 72 h D Test Guideline 201
Silica	, amorphous, fumed, c	rystfree:	
	ty to fish	: LL50 (Brachyo Exposure time Test Type: sta Test substanc	
	ty to daphnia and other c invertebrates	 EL50 (Daphnia magna (Water flea)): >= 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202 	
Toxici plants	ty to algae/aquatic	mg/l Exposure time Test Type: sta Test substanc	
12.2 Persis	stence and degradabil	ity	

bis-[4-(2,3-epoxipropoxi)p	henyl]propane:

Biodegradability	: Test Type: aerobic
	Inoculum: activated sludge, non-adapted
	Concentration: 20 mg/l
	Result: Not readily biodegradable.
	Biodegradation: 5 %



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ersion .6	Revision Date: 18.09.2024	SDS Number: 400001021217	Date of last issue: 13.12.2023 Date of first issue: 20.07.2018
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		Exposure time Method: OEC	e: 28 d D Test Guideline 301F
Stabi	lity in water	pH: 4	nalf life (DT50): 4.83 d (25 °C) D Test Guideline 111 sh water
		-	alf life (DT50): 7.1 d (25 °C)
		pH: 9 Method: OEC Remarks: Fre	D Test Guideline 111 sh water
		pH: 7	alf life (DT50): 3.58 d (25 °C)
		Method: OEC Remarks: Fre	D Test Guideline 111 sh water
[meth		neoxymethylene)]bis(o	eneoxymethylene)]bis(oxirane) and 2,2'- oxirane) and 2-({2-[4-(oxiran-2-
•	egradability	: Test Type: ae Inoculum: acti Concentration	vated sludge
		Result: Not bio	odegradable
		Biodegradatio Exposure time Method: Direc	
bispl	henol A - epoxy resi	ns, number average l	MW >700 - <1100:
Biode	egradability	: Test Type: ae Inoculum: Sev Concentration Result: Not bio Biodegradatio Exposure time	vage (STP effluent) : 20 mg/l odegradable n: 5 %

S

		Method: OECD Test Guideline 111 Remarks: Fresh water	
		Degradation half life (DT50): 7.1 d (25 °C) pH: 9 Method: OECD Test Guideline 111 Remarks: Fresh water	
		Degradation half life (DT50): 3.58 d (25 °C) pH: 7 Method: OECD Test Guideline 111 Remarks: Fresh water	
		ebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'- methylene)]bis(oxirane) and 2-({2-[4-(oxiran-2- yl)oxirane:	
	Biodegradability :	Test Type: aerobic Inoculum: activated sludge Concentration: 3 mg/l Result: Not biodegradable Biodegradation: ca. 0 % Exposure time: 28 d Method: Directive 67/548/EEC Annex V, C.4.E.	
	bisphenol A - epoxy resins, nu	mber average MW >700 - <1100:	
	Biodegradability :	Test Type: aerobic Inoculum: Sewage (STP effluent) Concentration: 20 mg/l Result: Not biodegradable Biodegradation: 5 % Exposure time: 28 d Method: OECD Test Guideline 301F	
	Stability in water :	Degradation half life (DT50): 4.83 d (25 °C) pH: 4 Method: OECD Test Guideline 111 Remarks: Fresh water	
		Degradation half life (DT50): 7.1 d (25 °C) pH: 9 Method: OECD Test Guideline 111 Remarks: Fresh water	
		Degradation half life (DT50): 3.58 d (25 °C) pH: 7 Method: OECD Test Guideline 111 Remarks: Fresh water	
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12.3 Bioaccumulative potential

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Bioaccumulation	:	Bioconcentration factor (BCF): 31 Remarks: Does not bioaccumulate.
Partition coefficient: n- octanol/water	:	log Pow: 3.242 (25 °C) pH: 7.1 Method: OECD Test Guideline 117

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2ylmethoxy)benzyl]phenoxy}methyl)oxirane:

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 GLP: yes

bisphenol A - epoxy resins, number average MW >700 - <1100:

Bioaccumulation	:	Species: Fish Bioconcentration factor (BCF): 31
		Remarks: Does not bioaccumulate.

12.4 Mobility in soil

Components:

bis-[4-(2,3-epoxipropoxi)phenyl]propane:

Distribution among	:	Koc: 445
environmental compartments		

Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]bis(oxirane) and 2,2'-
[methylenebis(4,1-phenyleneoxymethylene)]bis(oxirane) and 2-({2-[4-(oxiran-2-
ylmethoxy)benzyl]phenoxy}methyl)oxirane:

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

bisphenol A - epoxy resins, number average MW >700 - <1100:

2

Distribution among : Koc: 445 environmental compartments

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.

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12.6 Other adverse effects

Product:	
Endocrine disrupting potential	: This substance/mixture does not contain components considered to have endocrine disrupting properties for environment according to UK REACH Article 57(f).
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	:	Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number or ID number				
	ADR	:	UN 3082	
	RID	:	UN 3082	
	IMDG	:	UN 3082	
	ΙΑΤΑ	:	UN 3082	
14.2	UN proper shipping name			
	ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)	
	RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)	
	IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)	
	ΙΑΤΑ	:	Environmentally hazardous substance, liquid, n.o.s.	

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(BISPHENOL A EPOXY RESIN, BISPHENOL F EPOXY RESIN)

14.3 Transport hazard class(es)

ADR:ClassSubsidiary risksADR:9RID:9IMDG:9IATA:9IATA:9Packing group:IIIClassification Code:M6Hazard Identification Number:9Tunnel restriction code:9Tunnel restriction code:(-)RID:IIIPacking group:IIIClassification Code:90Labels:9Tunnel restriction code:Packing group:IIIClassification Code:M6Hazard Identification Number::0::
RID:9IMDG:9IMTA:9IATA:9AAR:IIIPacking group:IIIClassification Code:90Labels:9Tunnel restriction code:9RID:IIIPacking group:IIIClassification Code:Babels:Image: Note that the structure of
IMDG : 9 IATA : 9 AAA Packing group ADR Packing group : III Classification Code : M6 Hazard Identification Number : 90 Labels : 9 Tunnel restriction code : 0 RID Packing group : III Classification Code : 0 Classification code : 0 Classification code : 0 RID Packing group : 10 RID Packing group : 10 Classification Code : 0 RID Packing group : 10 Classification Code : 0 RID Packing group : 10 Classification Code : 0 RID
IATA : 9 4.4 Packing group ADR Packing group : III Classification Code : M6 Hazard Identification Number : 90 Labels : 90 Labels : 9 Tunnel restriction code : 9 Tunnel restriction code : 10 RID Packing group : 11 Classification Code : 10 RID Packing group : 11 Classification Code : 10 RID Packing group : 11 Classification Code : 10 RID
ADR Packing group : III Classification Code : M6 Hazard Identification Number : 90 Labels : 9 Tunnel restriction code : (-) RID Packing group : III Classification Code : M6
ADR Packing group : III Classification Code : M6 Hazard Identification Number : 90 Labels : 9 Tunnel restriction code : (-) RID . III Packing group : III Classification Code : M6
Packing group:IIIClassification Code:M6Hazard Identification Number:90Labels:9Tunnel restriction code:(-)RIDIIIPacking group:IIIClassification Code:M6
RID Packing group : III Classification Code : M6
Packing group : III Classification Code : M6
Hazard Identification Number : 90 Labels : 9
IMDG Packing group : III Labels : 9 EmS Code : F-A, S-F
IATA (Cargo) Packing instruction (cargo : 964 aircraft) Packing instruction (LQ) : Y964 Packing group : III Labels : Miscellaneous
IATA (Passenger)Packing instruction: 964(passenger aircraft)Packing instruction (LQ): Y964Packing group: IIILabels: Miscellaneous
4.5 Environmental hazards
ADR Environmentally hazardous : yes
RID Environmentally hazardous : yes
IMDG Marine pollutant : yes
IATA (Passenger) Environmentally hazardous : yes

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IATA (Cargo)

Environmentally hazardous : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 3
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	This product does not contain substances of very high concern.
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable

Other regulations:

Take note of The Management of Health and Safety at Work Regulations 1999 (requirements relating to protection of young people at work contained in Regulation 19) and of Directive 94/33/EC on the protection of young people at work.

The components of this product are reported in the following inventories:		
DSL	: All components of this product are on the Canadian DSL	
AIIC	: On the inventory, or in compliance with the inventory	
ENCS	: On the inventory, or in compliance with the inventory	
KECI	: On the inventory, or in compliance with the inventory	
PICCS	: On the inventory, or in compliance with the inventory	
IECSC	: On the inventory, or in compliance with the inventory	

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TCSI		: On the inventory	, or in compliance with the inventory
TSCA		: All substances lis	sted as active on the TSCA inventory

Inventories

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

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

Full text of H-Statements				
H315 H317 H319 H411	 Causes skin irritation. May cause an allergic sl Causes serious eye irrita Toxic to aquatic life with 	ation.		
Full text of other abbreviation	ns			
Aquatic Chronic Eye Irrit. Skin Irrit. Skin Sens. GB EH40 GB EH40 / TWA	 Long-term (chronic) aqu Eye irritation Skin irritation Skin sensitisation UK. EH40 WEL - Workp Long-term exposure limit 			
Further information				
Classification of the mixture: Classification procedure:				
Skin Irrit. 2	H315	Calculation method		
Eye Irrit. 2	H319	Calculation method		
Skin Sens. 1	H317	Calculation method		
Aquatic Chronic 2	H411	Calculation method		

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

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

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

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

1.1 Product identifier

Trade name : ARALDITE® STANDARD ULTRA HARDENER

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

Use of the	: Hardener
Substance/Mixture	

1.3 Details of the supplier of the safety data sheet

Company Address Telephone	 HUNTSMAN ADVANCED MATERIALS (UK) LIMITED Ickleton Road, Duxford, Cambridgeshire CB22 4XQ United Kingdom +41 61 299 20 41
E-mail address of person responsible for the SDS	: Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234 France ORFILA: +33(0)145425959 ASIA: +65 6336-6011 China: +86 20 39377888 +86 532 83889090 India: + 91 22 42 87 5333 Australia: 1800 786 152 New Zealand: 0800 767 437 USA: +1 800-424-9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)



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н	lazard pictogra	ams	:		<u>(</u> !	
S	ignal word	:	:	Danger		
Н	lazard stateme	ents	:	H317 H318 H411	Causes	ause an allergic skin reaction. Is serious eye damage. to aquatic life with long lasting effects.
P	recautionary	statements	:	P101		ical advice is needed, have product ner or label at hand.
				P102 P103	Keep o	out of reach of children. carefully and follow all instructions.
				Prevention		
				P273 P280		release to the environment. protective gloves/ eye protection/ face tion.
				Response:		
				P305 + P35	with wa lenses,	ater for several minutes. Remove contact , if present and easy to do. Continue , Immediately call a POISON CENTER/
				P391	Collect	t spillage.
				Disposal:		
				P501	facility i	se of contents/ container to an approved in accordance with local, regional, national ternational regulations.

Hazardous components which must be listed on the label:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine Amines, polyethylenepoly-, tetraethylenepentamine fraction Amines, polyethylenepoly-, triethylenetetramine fraction

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.	Classification	Concent
	EC-No.		ration



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	Index-No. Registration number		(% w/w)
Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction	-	Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1A; H317 Aquatic Chronic 2; H411	>= 50 - < 70
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine	68154-62-1 Polymer	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 3; H412	>= 30 - < 50
Amines, polyethylenepoly-, tetraethylenepentamine fraction	90640-66-7 292-587-7	Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Chronic 2; H411	>= 5 - < 10
Amines, polyethylenepoly-, triethylenetetramine fraction	90640-67-8 292-588-2	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Chronic 3; H412	>= 0.25 - < 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. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	First Aid responders should pay attention to self-protection and use the recommended protective clothing If potential for exposure exists refer to Section 8 for specific personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
If inhaled	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
In case of skin contact	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.



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SAFETY DATA SHEET
According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758
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In case	e of eye contact	:	tissue damage an In the case of con of water and seek Continue rinsing e Remove contact le Keep eye wide op	tact with eyes, rinse immediately with plenty medical advice. eyes during transport to hospital. enses.
If swall	lowed	:		ng by mouth to an unconscious person. st, call a physician.
4.2 Most important symptoms and effects, both acute and delayed				
Risks		:	May cause an alle Causes serious ey	•

4.3 Indication of any immediate medical attention and special treatment needed

: Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media Suitable extinguishing media : Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical Unsuitable extinguishing : Exercise caution when using a high volume water jet as it may media scatter and spread fire 5.2 Special hazards arising from the substance or mixture Specific hazards during Do not allow run-off from fire fighting to enter drains or water : firefighting courses. Hazardous combustion : Carbon oxides Nitrogen oxides (NOx) products **5.3 Advice for firefighters** Special protective equipment : Wear self-contained breathing apparatus for firefighting if for firefighters necessary. Specific extinguishing : Use extinguishing measures that are appropriate to local methods circumstances and the surrounding environment. Collect contaminated fire extinguishing water separately. This Further information : must not be discharged into drains.



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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, protectiv	e equipment and emergency procedures
Personal precautions :	Use personal protective equipment. Refer to protective measures listed in sections 7 and 8.
6.2 Environmental precautions	
Environmental precautions :	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
6.3 Methods and material for conta	inment 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

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. 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.
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.

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7.2 Conditions for safe storage, including any incompatibilities

niz contantione for care ctorage,		
Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers.
Advice on common storage	:	Do not store near acids.
Recommended storage temperature	:	2 - 40 °C
Further information on storage stability	-	Stable under normal conditions.
7.3 Specific end use(s) Specific use(s)	:	No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL)

Substance name	End Use	Exposure routes	Potential health effects	Value
Amines, polyethylenepoly-, tetraethylenepentamin e fraction	Workers	Inhalation	Long-term systemic effects	0.82 mg/m3
	Workers	Dermal	Long-term local effects	0.25 mg/cm2
	Consumers	Inhalation	Long-term systemic effects	0.14 mg/m3
	Consumers	Dermal	Long-term local effects	0.021 mg/cm2
	Consumers	Oral	Long-term systemic effects	0.21 mg/kg bw/day
Amines, polyethylenepoly-, triethylenetetramine fraction	Workers	Inhalation	Long-term systemic effects	0.54 mg/m3
	Consumers	Inhalation	Long-term systemic effects	0.096 mg/m3
	Consumers	Oral	Long-term systemic effects	14 mg/kg bw/day

Predicted No Effect Concentration (PNEC)

Substance name	Environmental Compartment	Value
Amines, polyethylenepoly-,	Fresh water	0.01 mg/l



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tetraethylenepentamine fraction				
	Remarks:Assessment Factors			
	Marine water	0.001 mg/l		
	Remarks: Assessment Factors			
	Freshwater - intermittent	0.068 mg/l		
	Remarks: Assessment Factors			
	Sewage treatment plant	4.6 mg/l		
	Remarks: Assessment Factors			
	Fresh water sediment	3.198 mg/kg dry weight (d.w.)		
	Remarks:Equilibrium method			
	Marine sediment	0.32 mg/kg dry weight (d.w.)		
	Remarks:Equilibrium method			
	Soil	2.5 mg/kg dry weight (d.w.)		
	Remarks:Assessment Factors			
Amines, polyethylenepoly-, triethylenetetramine fraction	Fresh water	0.027 mg/l		
	Marine water	0.003 mg/l		
	Sewage treatment plant	0.13 mg/l		
	Fresh water sediment	8.572 mg/kg dry weight (d.w.)		
	Marine sediment	0.857 mg/kg dry weight (d.w.)		
	Soil	1.25 mg/kg dry weight (d.w.)		

8.2 Exposure controls

Personal protective equipment				
Eye/face 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		
Break through time	:	> 8 h		
Break through time	•			
Material		Nitrile rubber		
Break through time	:	10 - 480 min		
Break anough ane	·			
Material		Ethyl Vinyl Alcohol Laminate (EVAL)		
Break through time	÷	> 8 h		
Remarks	:	Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard		



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		EN 374 deriv	red from it.			
Skin and body protection		Choose body	 Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place. 			
Respiratory protection		ventilation is that exposure	bry protection unless adequate local exhaust provided or exposure assessment demonstrates es are within recommended exposure guidelines. hould conform to EN 14387			
Filt	er type	: Combined pa	articulates and ammonia/amines type (K-P)			

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid	
Colour	: yellow	
Odour	: No data is available on the product its	elf.
Odour Threshold	: No data is available on the product its	elf.
Melting point/freezing point	: No data is available on the product its	elf.
Boiling point	: No data is available on the product its	elf.
Flammability (solid, gas)	: No data is available on the product its	elf.
Lower explosion limit / Lower flammability limit	: No data is available on the product its	elf.
Upper explosion limit / Upper flammability limit	: No data is available on the product its	elf.
Flash point	: > 150 °C Method: Pensky-Martens closed cup	
Auto-ignition temperature	: No data is available on the product its	elf.
Decomposition temperature	: No data is available on the product its	elf.
рН	: 11 Concentration: 500 g/l	
Viscosity Viscosity, dynamic	: 25,000 - 30,000 mPa.s (25 °C)	



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Solubility(ies) Water solubility		: practically in	soluble (20 °C)
Sc	olubility in other solvents	: No data is av	vailable on the product itself.
	tion coefficient: n- nol/water	: No data is av	vailable on the product itself.
Vapo	our pressure	: No data is av	vailable on the product itself.
Dens	sity	: 0.97 g/cm3 (25 °C)
Relat	tive density	: No data is av	vailable on the product itself.
Relat	tive vapour density	: No data is av	vailable on the product itself.
Parti	cle characteristics	: No data is av	vailable on the product itself.

9.2 Other information

No data is available on the product itself.

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : None known.

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

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

Acute toxicity

Not classified due to lack of data.

Product:

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Acute	dermal toxicity		estimate: > 2,000 mg/kg sulation method
<u>Com</u>	oonents:		
			rs, C18 (unsaturated) alkyl and fatty acids, C
•	turated) alkyl with an		ly-, triethylenetetramine fraction: male): > 2,000 mg/kg
, louie		Method: OEC	CD Test Guideline 423
		Assessment: toxicity	The substance or mixture has no acute oral
Acute	dermal toxicity		ale and female): > 2,000 mg/kg
			D Test Guideline 402 The substance or mixture has no acute derm
		toxicity	
Amin	es, polyethylenepo	ly-, tetraethylenepen	tamine fraction:
Acute	oral toxicity		ale): 3,221 mg/kg sulation method
			The component/mixture is minimally toxic after
Acute	dermal toxicity	: LD50 (Rabbit	, male and female): 1,260 mg/kg
		Method: OEC	CD Test Guideline 402
Amin	es, polyethylenepo	ly-, triethylenetetram	nine fraction:
Acute	oral toxicity		ale and female): 1,716.2 mg/kg
			CD Test Guideline 401 The component/mixture is moderately toxic a
		single ingesti	
Acute	dermal toxicity		, male and female): 1,465.4 mg/kg
			CD Test Guideline 402 The component/mixture is moderately toxic a
		single contac	

Product:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Mild skin irritation
GLP	:	yes

Components:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	human skin
Assessment Method		May cause eye and skin irritation. OECD Test Guideline 431

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Resul	lt	: May cause eye	and skin irritation.			
Speci		: human skin				
	ssment	: Irritant				
Metho		: OECD Test Gui				
Resul	It	: Irritating to skin.				
Fatty	acids, C18-unsatd.,	dimers, polymers with	h oleic acid and triethylenetetramine:			
Asses	ssment	: Irritating to skin.				
Amin	es, polyethylenepoly	y-, tetraethylenepenta	mine fraction:			
Speci	es	: reconstructed h	uman epidermis (RhE)			
	ssment	: Causes burns.				
Metho	bd	: OECD Test Gui	deline 435			
Resul	lt	: Corrosive after	3 minutes to 1 hour of exposure			
GLP		: yes				
Amin	es, polyethylenepoly	y-, triethylenetetramin	e fraction:			
Speci	es	: reconstructed h	uman epidermis (RhE)			
	ssment	: Causes burns.				
Method		: OECD Test Gui	deline 435			
Resul	lt	: Corrosive after	3 minutes to 1 hour of exposure			
Speci		: Rabbit				
Assessment		: Causes burns.				
Metho		: OECD Test Gui				
Resul	IT	: Corrosive after	3 minutes to 1 hour of exposure			
	us eye damage/eye					
	es serious eye damag	je.				
Produ Speci		: Rabbit				
		: Corrosive				
Assessment Method		: OECD Test Guideline 405				
Result			: Irreversible effects on the eye			
GLP		: yes				
Rema	arks	: May cause irrev	versible eye damage.			
Com	oonents:					
React	tion products of fatty a		, C18 (unsaturated) alkyl and fatty acids, C18 , triethylenetetramine fraction:			
	· ·					
Speci Metho		: Rabbit : OECD Test Gui	deline 405			
Resul		: Corrosive				
176201	n.	. CONUSIVE				
-			h oleic acid and triethylenetetramine:			
	ssment	: Irritating to eyes				



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Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Assessment	:	Risk of serious damage to eyes.
Result	:	Risk of serious damage to eyes.

Amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	Rabbit
Assessment	:	Risk of serious damage to eyes.
Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction:

Exposure routes	:	Skin
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	The product is a skin sensitiser, sub-category 1A.

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

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Assessment	:	May cause sensitisation by skin contact.
Result	:	May cause sensitisation by skin contact.

Amines, polyethylenepoly-, triethylenetetramine fraction:

:	Skin
:	Guinea pig
:	Probability or evidence of skin sensitisation in humans
:	OECD Test Guideline 406
:	Probability or evidence of skin sensitisation in humans
	:

Germ cell mutagenicity

Not classified due to lack of data.

Components:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction:

Genotoxicity in vitro	: Metabolic activation: with and without metabolic activation
-	Method: OECD Test Guideline 471
	Result: negative

Result: positive GLP: yes Test Type: Micronucleus test

Test system: Human lymphocytes Metabolic activation: with and without metabolic activation

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	Method: OECD Test Guideline 476 Result: negative
	Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 487 Result: negative
Amines, polyethylenepoly-, tetr	raethylenepentamine fraction:
Genotoxicity in vitro :	Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: positive
	Test Type: sister chromatid exchange assay Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 479 Result: positive
	Test Type: gene mutation test Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: positive
	Test Type: Micronucleus test Test system: Human lymphocytes Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 487 Result: negative
Genotoxicity in vivo :	Test Type: In vivo micronucleus test Species: Mouse (male and female) Cell type: Bone marrow Application Route: Intraperitoneal injection Dose: 185/370/600 mg/kg Method: OECD Test Guideline 474 Result: negative Remarks: Information given is based on data obtained from similar substances.
Amines, polyethylenepoly-, trie	thylenetetramine fraction:
Genotoxicity in vitro :	Test Type: reverse mutation assay Test system: Salmonella tryphimurium and E. coli Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Pasult: positive

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SAFETY DATA SHEET

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Metabolic activation: with and without metabolic activation

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		Method: OEC Result: negat	CD Test Guideline 487 tive
Geno	toxicity in vivo	Species: Mou Cell type: Bou Application R Dose: 0 - 600	oute: Intraperitoneal injection) mg/kg CD Test Guideline 474
	nogenicity assified due to lack o	f data.	
<u>Comp</u>	oonents:		
Amin	es, polyethylenepol	y-, triethylenetetram	nine fraction:
Speci Applic NOAE Metho Resul	cation Route EL od	: Mouse, male : Dermal : >= 50 mg/kg : OECD Test 0 : negative	bw/day
	cation Route sure time EL od	: Mouse, male : Dermal : 104 weeks : >= 20 mg/kg : OECD Test C : negative	bw/day
Not cl	oductive toxicity assified due to lack o ponents:	f data.	
React	ion products of fatty		ers, C18 (unsaturated) alkyl and fatty acids, C18 ly-, triethylenetetramine fraction:
Effect	s on fertility	Application R Method: OEC	, male and female oute: Oral CD Test Guideline 422 al testing did not show any effects on fertility.
Amin	es, polyethylenepol	v-, tetraethvlenepen	tamine fraction:
Effect	s on foetal opment	: Test Type: Pr Species: Rab Application R Dose: 5/50/12 Duration of S General Toxi Development Method: OEC	re-natal

Remarks: Information given is based on data obtained from similar substances.

Result: No teratogenic effects



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Test Type: Pre-natal Species: Rat, female Application Route: Oral Dose: 75/325/750 mg/kg bw/d Duration of Single Treatment: 10 d General Toxicity Maternal: NOAEL: >= 750 mg/kg body weight Developmental Toxicity: NOAEL: >= 750 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects Remarks: Information given is based on data obtained from similar substances.

Test Type: Pre-natal Species: Rat, female Application Route: Oral Dose: 200/400/800 mg/kg bw(d Duration of Single Treatment: 14 d General Toxicity Maternal: NOEL: 200 mg/kg body weight Developmental Toxicity: NOAEL: >= 400 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects Remarks: Information given is based on data obtained from similar substances.

Amines, polyethylenepoly-, triethylenetetramine fraction:

Effects on foetal development	 Test Type: Pre-natal Species: Rat Application Route: Oral Dose: 75/325/750 mg/kg bw/day Duration of Single Treatment: 10 d General Toxicity Maternal: NOAEL: >= 750 mg/kg body weight Developmental Toxicity: NOAEL: >= 750 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects
	Test Type: Pre-natal Species: Rabbit Application Route: Dermal Dose: 5/50/125 mg/kg bw/day Duration of Single Treatment: 13 d General Toxicity Maternal: NOAEL: 50 mg/kg body weight

Developmental Toxicity: NOAEL: >= 125 mg/kg body weight Method: OECD Test Guideline 414 Result: No teratogenic effects

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.



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Repeated dose toxicity

Components:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	Rat, male and female
NOAEL	:	1000 mg/kg
Application Route	:	Ingestion
Exposure time	:	6 Weeks
Number of exposures	:	7 d
Method	:	Subacute toxicity

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Species NOAEL Application Route Exposure time Dose Method Target Organs Remarks	 Rat, male and female 350 mg/kg/d Oral 28 d 100/350/1200 mg/kg bw/day OECD Test Guideline 407 Lungs Information given is based on data obtained from similar substances.
Species NOAEL Application Route Exposure time Dose Method Target Organs Remarks	 Rat, female 50 mg/kg Oral 90 d 50/175/600 mg/kg bw/d OECD Test Guideline 408 Lungs Information given is based on data obtained from similar substances.
Species NOAEL Application Route Exposure time Target Organs Remarks	 Dog, male and female 125 mg/kg Oral 28 d Lungs Information given is based on data obtained from similar substances.
Species NOAEL Application Route Exposure time Number of exposures Dose Method Remarks	 Rat, male and female 350 mg/kg Oral 4 weeks daily 100/350/1200 mg/kg bw/d OECD Test Guideline 408 Information given is based on data obtained from similar substances.
Species NOAEL Application Route	 Rat, male and female 600 - 3000 ppm oral (drinking water)



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Expos Dose Metho Rema		 92 days 120/600/3000 OECD Test G Information gives substances. 	
	EL cation Route sure time od	 Mouse, male a 600 ppm oral (drinking v 92 days 120/600/3000 OECD Test G Information giv substances. 	water) ppm
Expos	cation Route sure time per of exposures	 Rabbit, male a >= 200 mg/kg Dermal 20 days 6 h 5 days/week 50/100/200 mg OECD Test G 	g/kg bw/day
Speci NOAE Applic Expos Numb Dose Metho	es EL cation Route sure time per of exposures od ot Organs	: OECD Test G : Lungs	female mg/kg bw/day
	EL cation Route et Organs	 Dog, male and 125 mg/kg Oral Lungs Information given substances. 	f female ven is based on data obtained from similar
Speci NOAE Applic Metho Rema	EL cation Route od	 Dog, male and 50 mg/kg Oral Subchronic to: Information gives substances. 	
		: Rat, male and : 50 mg/kg : Oral : 26 weeks : 50/175/600 mg	



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Methoo Target Remar	Organs	: OECD Test G : Lungs : Information giv substances.	uideline 408 ven is based on data obtained from similar
••	L ation Route ure time d	 Mouse, male a 92 mg/kg, 600 Oral 120/600/3000 OECD Test G Information gives substances. 	ppm

Aspiration toxicity

Not classified due to lack of data.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment

This substance/mixture does not contain components considered to have endocrine disrupting properties for human health according to UK REACH Article 57(f),

Experience with human exposure No data available
Toxicology, Metabolism, Distribution No data available
Neurological effects No data available
Further information No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

Reaction products of fatty acid dimers and trimers, C18 (unsaturated) alkyl and fatty acids, C18 (unsaturated) alkyl with amines, polyethylenepoly-, triethylenetetramine fraction:

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



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Toxic	ity to algae/aquatic	: EC50 (Selenas	strum capricornutum (green algae)): 2.43 mg/l

Toxicity to algae/aquatic plants	EC50 (Selenastrum capricornutum (Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201	green algae)): 2.43 mg/l
Toxicity to microorganisms	EC50 (activated sludge): 421 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209	
Fatty acids, C18-unsatd., di	, polymers with oleic acid and trie	thylenetetramine:
Ecotoxicology Assessment		
Chronic aquatic toxicity	Harmful to aquatic life with long lasti	ng effects.
Amines, polyethylenepoly-,	ethylenepentamine fraction:	
Toxicity to fish	LC50 (Poecilia reticulata (guppy)): 4 End point: mortality Exposure time: 96 h Test Type: semi-static test Test substance: Fresh water Method: Directive 67/548/EEC, Anne GLP: yes	
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)) End point: Immobilization Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: Tested according to Annex 67/548/EEC.	
Toxicity to algae/aquatic plants	ErC50 (Selenastrum capricornutum Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201	(green algae)): 6.8 mg/l
	NOEC (Selenastrum capricornutum Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201	(green algae)): 0.5 mg/l
Toxicity to microorganisms	EC50 (Bacteria): 97.3 mg/l Exposure time: 2 h Test Type: static test Test substance: Fresh water	
	NOEC : 500 mg/l Exposure time: 28 d	



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			Method: OECD T	est Guideline 216
aquati	ty to daphnia and other ic invertebrates nic toxicity)	:	Exposure time: 2' Species: Daphnia Test substance: F Method: OECD T	magna (Water flea) Fresh water est Guideline 202 ation given is based on data obtained from
Toxici organ	ty to soil dwelling isms	:	NOEC: 125 mg/kg Exposure time: 58 Species: Eisenia Method: OECD T	5 d fetida (earthworms)
Amin	es, polyethylenepoly-,	trie	thylenetetramine	fraction:
Toxici	ty to fish	:	Exposure time: 96 Test Type: semi-s Test substance: F	static test
			LC50 (Leuciscus Exposure time: 96	idus (Golden orfe)): 200 - 500 mg/l 5 h
			LC50 (Pimephale End point: mortali Exposure time: 96 Test Type: static Test substance: F Method: EPA OT	5 h test Fresh water
	ty to daphnia and other c invertebrates	:	End point: Immob Exposure time: 48 Test Type: static f Test substance: F	3 h test
Toxici plants	ty to algae/aquatic	:	ErC50 (Selenastr Exposure time: 72 Test Type: semi-s Test substance: F Method: OECD T	static test Fresh water
			EC10 (Selenastru Exposure time: 72 Test Type: semi-s Test substance: F Method: OECD T	static test Fresh water
Toxici	ty to microorganisms	:	NOEC (Bacteria): Exposure time: 28 Method: OECD T	3 d

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HUNTSMAN

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		Exposure tim Method: OEC	ria): > 100 mg/l e: 28 h D Test Guideline 216 ria): 15.7 mg/l
		Exposure tim Test Type: st	e: 2 h
		NOEC (Bacte Exposure tim Test Type: st Test substan	e: 2 h
aqua	city to daphnia and other atic invertebrates onic toxicity)	Exposure tim Species: Dap Test Type: se Test substan	
	city to soil dwelling nisms		
Eco	toxicology Assessmen	t	
Chro	onic aquatic toxicity	: Harmful to ac	uatic life with long lasting effects.
12.2 Pers	sistence and degradabi	lity	
<u>Con</u>	ponents:		
	nes, polyethylenepoly-		
Biod	legradability	Result: Not ir Biodegradatio Exposure tim Method: OEC	ivated sludge herently biodegradable. on: 17 %
		Result: Not re Biodegradation Exposure tim Method: OEC	tivated sludge eadily biodegradable. on: 0 %



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Amines, polyethylenepoly-, triethylenetetramine fraction:

		-
Biodegradability	:	Inoculum: activated sludge
		Result: Not readily biodegradable.
		Biodegradation: 0 %
		Exposure time: 162 d
		Method: OECD Test Guideline 301D
		Test substance: Fresh water
		Test Turse, corchis

Test Type: aerobic Inoculum: activated sludge Result: Not inherently biodegradable. Biodegradation: 20 % Related to: Dissolved organic carbon (DOC) Exposure time: 84 d Method: OECD Test Guideline 302A Test substance: Fresh water

12.3 Bioaccumulative potential

Components:

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Partition coefficient: n- : log Pow: -2.6 (20 °C) octanol/water

Amines, polyethylenepoly-, triethylenetetramine fraction:

Partition coefficient: n-	:	log Pow: -2.08 - 2.90 (20 °C)
octanol/water		Method: QSAR

12.4 Mobility in soil

Components:

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Distribution among	:	Koc: 3.2 - 3.7
environmental compartments		Method: OECD Test Guideline 106

Amines, polyethylenepoly-, triethylenetetramine fraction:

Distribution among	:	Koc: 3162.28, log Koc: 3.5
environmental compartments		Method: OECD Test Guideline 106

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered
		to be either persistent, bioaccumulative and toxic (PBT), or
		very persistent and very bioaccumulative (vPvB) at levels of
		0.1% or higher.

12.6 Other adverse effects

Product:

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	docrine disrupting tential	considered to ha	nixture does not contain components ve endocrine disrupting properties for ording to UK REACH Article 57(f).		
Additional ecological information		unprofessional h	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	 Dispose of contents and container in accordance with all lo regional, national and international regulations. Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. 	ocal,
Contaminated packaging	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.	

SECTION 14: Transport information

14.1 UN number or ID number				
ADR	:	UN 3082		
RID	:	UN 3082		
IMDG	:	UN 3082		
ΙΑΤΑ	:	UN 3082		
14.2 UN proper shipping name				
ADR	:	ENVIRONMENTALL N.O.S. (POLYAMIDE RESIN	Y HAZARDOUS SUBSTANCE, LIQUID, N)	
RID	:	ENVIRONMENTALL N.O.S. (POLYAMIDE RESIN	Y HAZARDOUS SUBSTANCE, LIQUID, N)	
IMDG	:	ENVIRONMENTALL N.O.S. (POLYAMIDE RESIN	Y HAZARDOUS SUBSTANCE, LIQUID, N)	
ΙΑΤΑ	:	Environmentally haza (POLYAMIDE RESIN	ardous substance, liquid, n.o.s. N	
14.3 Transport hazard class(es))			
		Class	Subsidiary risks	
ADR	:	9		
RID	:	9		



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IMD	3	: 9	
IATA		: 9	
	king group	. 0	
ADR			
Pack	ing group	: 111	
	sification Code	: M6	
Haza Labe	ard Identification Number	: 90 : 9	
	el restriction code	: (-)	
RID			
	ing group	:	
	sification Code ard Identification Number	: M6 : 90	
Labe		: 9	
IMD	G		
	ing group	: 111	
Labe		: 9	
	Code	: F-A, S-F	
	(Cargo) ing instruction (cargo	: 964	
aircra	aft)		
	ing instruction (LQ)	: Y964	
Pack Labe	ing group Is	: III : Miscellaneous	
	(Passenger)	. Wiscenarieout	5
	ing instruction	: 964	
	senger aircraft)		
	ing instruction (LQ)	: Y964	
Pack Labe	ing group	: III : Miscellaneous	
	ronmental hazards	. Miscellaneous	5
ADR Envii	onmentally hazardous	: yes	
RID		. ,	
	onmentally hazardous	: yes	
IMD	6		
Marii	ne pollutant	: yes	
	(Passenger) conmentally hazardous	: yes	
	(Cargo) conmentally hazardous	: yes	
-	cial precautions for use	er	
	time transport in bulk a	according to IMO i	instruments

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

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Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 3
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	This product does not contain substances of very high concern.
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable

Other regulations:

Take note of The Management of Health and Safety at Work Regulations 1999 (requirements relating to protection of young people at work contained in Regulation 19) and of Directive 94/33/EC on the protection of young people at work.

The components of this product are reported in the following inventories:			
DSL	: All components of this product are on the Canadian DSL		
AIIC	: On the inventory, or in compliance with the inventory		
ENCS	: On the inventory, or in compliance with the inventory		
KECI	: On the inventory, or in compliance with the inventory		
PICCS	: Not in compliance with the inventory		
IECSC	: On the inventory, or in compliance with the inventory		
TCSI	: On the inventory, or in compliance with the inventory		
TSCA	: All substances listed as active on the TSCA inventory		

Inventories

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



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15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of H-Statements

H302 H312 H314 H315 H317 H318 H319 H411 H412		Harmful if swallowed. Harmful in contact with skin. Causes severe skin burns and eye damage. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.	
Full text of other abbreviation	ons		
Acute Tox. Aquatic Chronic Eye Dam. Eye Irrit. Skin Corr. Skin Irrit. Skin Sens.			
Further information			
Classification of the mixture:			Classification procedure:
Eye Dam. 1	H3′	18	Based on product data or assessment
Skin Sens. 1	H3′	17	Calculation method
Aquatic Chronic 2	H4 ⁻	11	Calculation method

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.



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Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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