SAFETY DATA SHEET

ARALDITE® STANDARD T

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

1.1 Product identifier

Product name : ARALDITE® STANDARD T

Registration number : Not available.

Product code : 00068950

Product description :

Other means of identification : Not available.

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

Product use : Epoxy adhesive

1.3 Details of the supplier of the safety data sheet

Supplier : Huntsman Advanced Materials (Switzerland) GmbH
Klybeckstrasse 200
CH-4057 Basel / Switzerland
Tel.: +41 61 299 20 41
Fax: +41 61 299 20 40

e-mail address of person responsible for this SDS : Global_Product_EHS_AdMat@huntsman.com

E-mail address to request full REACH registration number upon EU member State Authority request :
REACH_Registration_Nr_AM@huntsman.com

1.4 Emergency telephone number

Switzerland : Swiss Toxicologic Information Centre - Emergency Phone 145 (24 h, +41 44 251 5151 from outside Switzerland)

Supplier

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 4050 6333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

Norsk importør:
Lindberg & Lund AS
Torvuttaket 89, 1540 Vestby
Tlf.6497 5555, Fax. 64975556
Nødnummer,
giftinformasjonen : 22591300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Working pack (preparation)

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Xi; R36/38
R43
R52/53

Human health hazards : Irritating to eyes and skin. May cause sensitisation by skin contact.

SECTION 2: Hazards identification

Environmental hazards : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard symbol or symbols :

Indication of danger : Irritant

Risk phrases : R36/38- Irritating to eyes and skin.
R43- May cause sensitisation by skin contact.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S2- Keep out of the reach of children.
S24/25- Avoid contact with skin and eyes.
S37- Wear suitable gloves.
S46- If swallowed, seek medical advice immediately and show this container or label.

Hazardous ingredients : bisphenol A - epoxy resins, number average MW >700 - <1100
polyamide resin
epoxy phenol novolac resin
butanedioldiglycidyl ether

Supplemental label elements : Not applicable.

Supplemental label elements : Contains epoxy constituents. See information supplied by the manufacturer.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Working pack (preparation)

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	

SECTION 3: Composition/information on ingredients

bisphenol A - epoxy resins, number average MW >700 - <1100	CAS: 25068-38-6 EC: Polymer	13-30	Xi; R36/38 R43	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317	[1]
polyamide resin	CAS: 68154-62-1 EC: Polymer	13-30	Xi; R36/38 R43 R52/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
Phenol, polymer with formaldehyde, glycidyl ether	CAS: 28064-14-4 EC: Not available.	13-30	Xi; R36/38 R43 N; R51/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411	[1]
1,4-Bis(2, 3-epoxypropoxy)butane	CAS: 2425-79-8 EC: 219-371-7 RRN: 01-2119494060-45	7-13	Xn; R20/21 Xi; R36/38 R43 R52/53	Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317	[1]
1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-, polymer with (chloromethyl)oxirane - trimethylolpropane triglycidylether	CAS: 30499-70-8 EC: Not available.	1-3	Xi; R36/38 R43 R52/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
trientine	CAS: 112-24-3 EC: 203-950-6	1-3	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
Amines, polyethylenepoly-, tetraethylenepentamine fraction	CAS: 90640-66-7 EC: 292-587-7 RRN: 01-2119487290-37	1-3	Xn; R21/22 C; R34 R43 N; R51/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 2, H411	[1]
			See Section 16 for the full text of the R-phrases declared above.	**See Section 16 for the full text of the H statements declared above.**	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
[5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

Other means of identification

REACH Product name	CAS no.	Other	CAS no.
Amines, polyethylenepoly-, tetraethylenepentamine fraction	90640-66-7	Tetraethylenepentamine	112-57-2

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Irritating to eyes.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Irritating to skin. May cause sensitisation by skin contact.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
irritation
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 4: First aid measures

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material.

6.3 Methods and materials for containment and cleaning up

SECTION 6: Accidental release measures

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 2 to 40°C (35.6 to 104°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Storage hazard class Huntsman Advanced Materials : Storage class 12, Liquids, not dangerous

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effects
trientine	DNEL	Short term Inhalation	5380 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.57 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.028 mg/m³	Workers	Local
	DNEL	Short term Dermal	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	1600 mg/m³	Consumers	Systemic
	DNEL	Short term Oral	20 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1 mg/cm²	Consumers	Local
	DNEL	Short term Dermal	0.25 mg/kg bw/day	Consumers	Local
	DNEL	Long term Inhalation	0.29 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0.41 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.43 mg/cm²	Consumers	Local
Amines, polyethylenepoly-, tetraethylenepentamine fraction	DNEL	Short term Inhalation	6940 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.74 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.29 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.036 mg/cm²	Workers	Local
	DNEL	Short term Dermal	10 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	2071 mg/m³	Consumers	Systemic

SECTION 8: Exposure controls/personal protection

	DNEL	Short term Oral	26 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1.29 mg/cm²	Consumers	Local
	DNEL	Long term Dermal	0.32 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.38 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0.53 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.56 mg/cm²	Consumers	Local

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
trientine	PNEC	Fresh water	190 µg/l	Assessment Factors
	PNEC	Fresh water sediment	95.9 mg/kg	Equilibrium Partitioning
	PNEC	Marine	38 µg/l	Assessment Factors
	PNEC	PNECintermittent	200 µg/l	Assessment Factors
	PNEC	Marine water sediment	19.2 mg/kg	Equilibrium Partitioning
	PNEC	Soil	19.1 mg/kg	Equilibrium Partitioning
	PNEC	Sewage Treatment Plant	4.25 mg/l	Assessment Factors
	PNEC	Secondary Poisoning	0.18 mg/kg	Assessment Factors
Amines, polyethylenepoly-, tetraethylenepentamine fraction	PNEC	Secondary Poisoning	0.23 mg/kg	Assessment Factors
	PNEC	Fresh water	0.0068 mg/l	Assessment Factors
	PNEC	Marine	0.0068 mg/l	Assessment Factors
	PNEC	PNECintermittent	0.068 mg/l	Assessment Factors
	PNEC	Fresh water sediment	0.341 mg/kg	Equilibrium Partitioning
	PNEC	Marine water sediment	0.746 mg/kg	Equilibrium Partitioning
	PNEC	Soil	0.274 mg/kg	Equilibrium Partitioning
	PNEC	Sewage Treatment Plant	4.6 mg/l	Assessment Factors

8.2 Exposure controls

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : 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.

SECTION 8: Exposure controls/personal protection

Material of gloves for long term application (BTT>480min): : butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL), nitrile rubber, neoprene, Polyvinyl Chloride (PVC)

Material of gloves for short term/splash application (10min <BTT<480min): : butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL), nitrile rubber, neoprene, Polyvinyl Chloride (PVC)

(BTT = Break Through Time)

Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US). Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at www.gisbau.de.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour : Not available.

Odour : Not available.

Odour threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Initial boiling point and boiling range : Not available.

Flash point : Closed cup: >150°C [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Upper/lower flammability or explosive limits : Not available.

Vapour pressure : Not available.

Vapour density : Not available.

Relative density : Not available.

Solubility(ies)

SECTION 9: Physical and chemical properties

Water solubility : Not available.

Partition coefficient: n-octanol/ water ($LogK_{ow}$) : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic: Not available.
Kinematic: Not available.
Kinematic (40°C): Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

Density : 1.07 g/cm³ [20°C (68°F)]

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : No specific data.

10.5 Incompatible materials : No specific data.

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Decomposition products may include the following materials:Refer to SDS for individual components of the pack.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure
bisphenol A - epoxy resins, number average MW >700 - <1100	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	>2000 mg/kg	-
Phenol, polymer with formaldehyde, glycidyl ether	LC0 Inhalation Vapour	Rat - Male	0.00001 ppm	5 hours
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	>2000 mg/kg	-
1,4-Bis(2,3-epoxypropoxy) butane	LD50 Dermal	Rat - Male, Female	2150 mg/kg	-
	LD50 Oral	Rat - Male, Female	1163 mg/kg	-

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1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-, polymer with (chloromethyl)oxirane - trimethylolpropane triglycidylether	LD50 Oral	Rat	>2000 mg/kg	-
trientine	LD50 Dermal	Rabbit - Male, Female	1465.4 mg/kg	-
	LD50 Oral	Rat - Male, Female	1716.2 mg/kg	-
Amines, polyethylenepoly-, tetraethylenepentamine fraction	LD50 Dermal	Rabbit - Male, Female	1260 mg/kg	-
	LD50 Oral	Rat - Male, Female	1716.2 mg/kg	-
	LD50 Oral	Rat - Male	3250 mg/kg	-

Conclusion/Summary : No additional information.

Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
Phenol, polymer with formaldehyde, glycidyl ether	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes	Mild irritant
	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin	Mild irritant
1,4-Bis(2,3-epoxypropoxy) butane	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin	Non-irritant.
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes	Severe irritant
trientine	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Skin	Corrosive
	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Eyes	Corrosive
Amines, polyethylenepoly-, tetraethylenepentamine fraction	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin	Corrosive
	Unknown guidelines	Rabbit	Eyes	Corrosive

Conclusion/Summary

Skin : 1,4-Bis(2, 3-epoxypropoxy)butane — Based on the human occupational exposure data, this substance is considered as irritating to skin.
trientine — Corrosive to the skin.
Amines, polyethylenepoly-, tetraethylenepentamine fraction — Corrosive to the skin.

Eyes : 1,4-Bis(2, 3-epoxypropoxy)butane — Severely irritating to eyes.
trientine — Corrosive to eyes.
Amines, polyethylenepoly-, tetraethylenepentamine fraction — Corrosive to eyes.

Respiratory : No additional information.

Sensitiser

SECTION 11: Toxicological information

Product/ingredient name	Test	Route of exposure	Species	Result
bisphenol A - epoxy resins, number average MW >700 - <1100	-	skin	Mouse	Sensitising
Phenol, polymer with formaldehyde, glycidyl ether	OECD 429 Skin Sensitisation: Local Lymph Node Assay	skin	Mouse	Sensitising
1,4-Bis(2,3-epoxypropoxy) butane	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-, polymer with (chloromethyl)oxirane - trimethylolpropane triglycidylether	-	skin	Guinea pig	Sensitising
trientine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
Amines, polyethylenepoly-, tetraethylenepentamine fraction	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising

Conclusion/Summary

Skin : No additional information.

Respiratory : No additional information.

Mutagenicity

Product/ingredient name	Test	Result
Phenol, polymer with formaldehyde, glycidyl ether	-	Positive
	-	Positive
	-	Negative
	-	Negative
1,4-Bis(2,3-epoxypropoxy) butane	OECD 471 Bacterial Reverse Mutation Test	Positive
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
trientine	OECD 482 Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells in vitro	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
Amines, polyethylenepoly-, tetraethylenepentamine fraction	OECD 471 Bacterial Reverse Mutation Test	Positive
	OECD 479 Genetic Toxicology: In vitro Sister Chromatid Exchange Assay in Mammalian Cells	Positive
	OECD 482 Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells in vitro	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

SECTION 11: Toxicological information

Conclusion/Summary : Phenol, polymer with formaldehyde, glycidyl ether: The weight of the scientific evidence indicates that this material is non-genotoxic.

trientine: The weight of the scientific evidence indicates that this material is non-genotoxic.

Amines, polyethylenepoly-, tetraethylenepentamine fraction: The weight of the scientific evidence indicates that this material is non-genotoxic.

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs
Phenol, polymer with formaldehyde, glycidyl ether	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	2 years; 7 days per week	Negative	Oral	-
	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	2 years; 5 days per week	Negative	Dermal	-
	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Mouse	2 years; 3 days per week	Negative	Dermal	-
trientine	OECD 451 Carcinogenicity Studies	Mouse	3 days per week	Negative	Dermal	-

Conclusion/Summary : Amines, polyethylenepoly-, tetraethylenepentamine fraction: In accordance with column 2 of Annex VII - X of Regulation (EC) No 1907/2006, the test for this property of the substance does not need to be conducted.

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Target organs
bisphenol A - epoxy resins, number average MW >700 - <1100	-	Rat	Oral	-
Phenol, polymer with formaldehyde, glycidyl ether	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Oral: 540 mg/kg NOEL	-

Conclusion/Summary : trientine: In accordance with column 2 of Annex VII - X of Regulation (EC) No 1907/2006, the test for this property of the substance does not need to be conducted.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Phenol, polymer with formaldehyde, glycidyl ether	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	>540 mg/kg NOEL
	-	Rabbit - Female	>300 mg/kg NOEL
	OECD 414 Prenatal Developmental Toxicity Study	Rabbit - Female	180 mg/kg NOAEL
trientine	OECD 414 Prenatal Developmental Toxicity Study	Rat	>750 mg/kg NOAEL
	OECD 414 Prenatal Developmental Toxicity Study	Rabbit	125 mg/kg NOAEL
Amines, polyethylenepoly-, tetraethylenepentamine fraction	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	750 mg/kg NOAEL
	OECD 414 Prenatal Developmental	Rabbit -	125 mg/kg NOAEL

SECTION 11: Toxicological information

	Toxicity Study	Female	

Conclusion/Summary : No additional information.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : Irritating to mouth, throat and stomach.

Skin contact : Irritating to skin. May cause sensitisation by skin contact.

Eye contact : Irritating to eyes.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : No specific data.

Ingestion : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Eye contact : Adverse symptoms may include the following:
irritation
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Result type		Result	Target organs
Phenol, polymer with formaldehyde, glycidyl ether	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	NOAEL	-	50 mg/kg	-
	OECD 411 Subchronic Dermal Toxicity: 90-day Study	NOEL		10 mg/kg	-
	OECD 411 Subchronic Dermal Toxicity: 90-day Study	NOAEL		100 mg/kg	-
1,4-Bis(2,3-epoxypropoxy) butane	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOAEL	-	200 mg/kg	-
trientine	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	NOAEL	-	50 mg/kg/d	lungs
Amines, polyethylenepoly-, tetraethylenepentamine fraction	No official guidelines	NOAEL	-	50 mg/kg/d	lungs
	OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study	NOAEL		50 mg/kg/d	skin

SECTION 11: Toxicological information

Conclusion/Summary : No additional information.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
bisphenol A - epoxy resins, number average MW >700 - <1100	-	Acute EC50	72 hours Static	Algae	9.4 mg/l
	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute EC50	48 hours Static	Daphnia	1.7 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Static	Fish	1.5 mg/l
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC	21 days	Daphnia	0.3 mg/l
Phenol, polymer with formaldehyde, glycidyl ether	-	Acute EC50	72 hours Static	Algae	9.4 mg/l
	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute EC50	48 hours Static	Daphnia	1.7 mg/l
	-	Acute IC50	3 hours Static	Bacteria	>100 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Static	Fish	1.5 mg/l
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	0.3 mg/l
1,4-Bis(2,3-epoxypropoxy) butane	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute EC50	24 hours Static	Daphnia	75 mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute EL50	72 hours Static	Algae	>160 mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute IC50	3 hours Static	Bacteria	>100 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Static	Fish	24 mg/l
1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)-, polymer with (chloromethyl)oxirane - trimethylolpropane triglycidylether	-	Acute LC0	96 hours	Fish	56 mg/l
	-	Acute LC50	96 hours	Fish	75 mg/l

SECTION 12: Ecological information

trientine	No official guidelines	Acute	EC50	30 minutes Static	Bacteria	800	mg/l
	EU EC C.2 Acute Toxicity for Daphnia	Acute	EC50	48 hours Static	Daphnia	31.1	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Semi-static	Algae	20	mg/l
	EPA OPPTS EPA OTS 797. 1400	Acute	LC50	96 hours Static	Fish	330	mg/l
	No official guidelines	Chronic	EC10	30 minutes Static	Bacteria	42.5	mg/l
	OECD OECD 202: Part II (Daphnia sp., Reproduction Test	Chronic	EC10	21 days Semi-static	Daphnia	1.9	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours Semi-static	Algae	<2.5	mg/l
Amines, polyethylenepoly-, tetraethylenepentamine fraction	No official guidelines	Acute	EC50	2 hours Static	Bacteria	97.3	mg/l
	EU EC C.2 Acute Toxicity for Daphnia	Acute	EC50	48 hours Static	Daphnia	24.1	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	6.8	mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute	LC50	96 hours Semi-static	Fish	420	mg/l
	No official guidelines	Chronic	EC10	2 hours Static	Bacteria	46	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOEC	72 hours Static	Algae	0.5	mg/l

Conclusion/Summary : No additional information.

12.2 Persistence and degradability

Product/ingredient name	Test	Period	Result
Phenol, polymer with formaldehyde, glycidyl ether	OECD Derived from OECD 301F (Biodegradation Test)	28 days	5 %
1,4-Bis(2,3-epoxypropoxy) butane	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	43 %
trientine	OECD 302A Inherent Biodegradability: Modified SCAS Test	84 days	20 %
	OECD 301D Ready Biodegradability - Closed Bottle Test	162 days	0 %
Amines, polyethylenepoly-, tetraethylenepentamine fraction	OECD 302A Inherent Biodegradability: Modified SCAS Test	84 days	17 %

SECTION 12: Ecological information

Conclusion/Summary : trientine Not biodegradable
Amines, polyethylenepoly-, tetraethylenepentamine fraction Not biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Phenol, polymer with formaldehyde, glycidyl ether	Fresh water 4.83 days Fresh water 3.58 days Fresh water 7.1 days	-	Not readily
1,4-Bis(2,3-epoxypropoxy) butane	-	-	Not readily
Amines, polyethylenepoly-, tetraethylenepentamine fraction	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Phenol, polymer with formaldehyde, glycidyl ether	3.242	31	low
1,4-Bis(2,3-epoxypropoxy) butane	-0.269	-	low
trientine	-2.65	-	low
Amines, polyethylenepoly-, tetraethylenepentamine fraction	-3.16	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

12.7 Other ecological information

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste product residues should not be disposed of via the sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container

SECTION 13: Disposal considerations

must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	14.1 UN number	14.2 UN proper shipping name
ADR/RID	Not regulated.	-
IMDG	Not regulated.	-
IATA	Not regulated.	-

	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information
ADR/RID	-	-	No.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	-
IMDG	-	-	No.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	-

SECTION 14: Transport information

IATA	-	-	No.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	-

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

This product is compliant with the REACH Regulation EC 1907/2006.
Huntsman has pre-registered and is registering all of the substances that it manufactures in or imports into the European Economic Area (EEA) that are subject to Title II of the REACH Regulation.

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed

Priority List Chemicals : Not listed

Integrated pollution prevention and control list (IPPC) - Air : Not listed

Integrated pollution prevention and control list (IPPC) - Water : Not listed

National regulations

Australia inventory (AICS) : All components are listed or exempted.

Canada inventory : All components are listed or exempted.

SECTION 15: Regulatory information

China inventory (IECSC) : All components are listed or exempted.

Japan inventory : Not determined.

Korea inventory (KECI) : All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.

Philippines inventory (PICCS) :

United States inventory (TSCA 8b) : All components are listed or exempted.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Skin Corr. 1B, H314
Eye Dam. 1, H318
Skin Sens. 1, H317
Aquatic Chronic 3, H412

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Skin Corr. 1B, H314	Expert judgment
Eye Dam. 1, H318	Expert judgment
Skin Sens. 1, H317	Expert judgment
Aquatic Chronic 3, H412	Expert judgment

Full text of abbreviated H statements :

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

SECTION 16: Other information

Full text of classifications [CLP/GHS] :

Acute Tox. 4, H302	ACUTE TOXICITY: ORAL - Category 4
Acute Tox. 4, H312	ACUTE TOXICITY: SKIN - Category 4
Acute Tox. 4, H332	ACUTE TOXICITY: INHALATION - Category 4
Aquatic Chronic 2, H411	LONG-TERM AQUATIC HAZARD - Category 2
Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Skin Corr. 1B, H314	SKIN CORROSION/IRRITATION - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1, H317	SKIN SENSITIZATION - Category 1

Full text of abbreviated R phrases : R20/21- Harmful by inhalation and in contact with skin.
R21/22- Harmful in contact with skin and if swallowed.
R34- Causes burns.
R36/38- Irritating to eyes and skin.
R43- May cause sensitisation by skin contact.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : C - Corrosive
Xn - Harmful
Xi - Irritant
N - Dangerous for the environment

(M)SDS no. : 00068950

Date of printing : 3/13/2014.

Date of issue/ Date of revision : 3/13/2014.

Date of previous issue : 3/12/2014.

Version : 4.02

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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.