SAFETY DATA SHEET

ARALDITE® 2014-1 GB HARDENER

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

1.1 Product identifier

Product name : ARALDITE® 2014-1 GB HARDENER

Registration number : Not available.

Product code : 00074050

Product description : Not available.

Other means of identification : Not available.

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

Product use : Hardener for adhesive systems

1.3 Details of the supplier of the safety data sheet

Supplier : Huntsman Advanced Materials (Europe)BVBA
Everslaan 45
3078 Everberg / Belgium
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

Supplier

Telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
India: +91 22 4050 6333
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

Product definition : Mixture

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

Skin Irrit. 2, H315
Eye Dam. 1, H318
Skin Sens. 1, H317

Ingredients of unknown toxicity :

Ingredients of unknown ecotoxicity :

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

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

SECTION 2: Hazards identification

Classification : T; R23
Xi; R41, R38
R43

Human health hazards : Toxic by inhalation. Risk of serious damage to eyes. Irritating to skin. May cause sensitisation by skin contact.

Additional information : According to Directive 99/45/EC, Article 6, Paragraph 1b, classification derived from direct toxicological testing of the preparation take precedence over classification derived from using the conventional (calculation) method.

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 pictograms :

Signal word : Danger

Hazard statements : Causes serious eye damage.
Causes skin irritation.
May cause an allergic skin reaction.

Precautionary statements

General : Not applicable.

Prevention : Wear protective gloves: > 8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL). Wear eye or face protection. Avoid breathing vapour.

Response : IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTER or physician.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients : polyamide resin
N(3-dimethylaminopropyl)-1,3-propylenediamine

Supplemental label elements : Not applicable.

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 : Mixture

SECTION 3: Composition/information on ingredients

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine	CAS: 68082-29-1 EC: 500-191-5	3-7	Xi; R36/38 R43 R52/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
N'-(3-Aminopropyl)-N, N-dimethylpropane-1, 3-diamine	CAS: 10563-29-8 EC: 234-148-4	3-7	Xn; R21/22 C; R35 R43	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1A, H314 Eye Dam. 1, H318 Skin Sens. 1, H317	[1]
2,2'-iminodi (ethylamine)	CAS: 111-40-0 EC: 203-865-4	3-7	T+; R26 Xn; R21/22 C; R34 Xi; R37 R43	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 2, H330 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335	[1] [2]
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]
4,4'-isopropylidenediphenol	CAS: 80-05-7 EC: 201-245-8 RRN: 01-2119457856-23	1-3	Repr. Cat. 3; R62 Xi; R41, R37 R43 R52 **See Section 16 for the full text of the R-phrases declared above.**	Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 2, H361f STOT SE 3, H335 Aquatic Chronic 2, H411 **See Section 16 for the full text of the H statements declared above.**	[1] [2]

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

Other means of identification

REACH Product name	CAS no.	Other	CAS no.
fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine	68082-29-1	polyamide resin	

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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 : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and 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. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician. 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. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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 : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

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

Inhalation : No specific data.

SECTION 4: First aid measures

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

4.3 Indication of any immediate medical attention and special treatment needed

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
sulfur oxides
metal oxide/oxides

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.

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. Do not breathe 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 the information in "For non-emergency personnel".

SECTION 6: Accidental release 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).

6.3 Methods and materials for containment and cleaning up

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 breathe vapour or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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. Store locked up. 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.

SECTION 7: Handling and storage

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

Product/ingredient name	Exposure limit values
Diethylenetriamine	**EH40/2005 WELs (United Kingdom (UK), 1/2012). Absorbed through skin.** TWA: 4.3 mg/m³ 8 hours. TWA: 1 ppm 8 hours.
4,4'-isopropylidenediphenol	**EH40/2005 WELs (United Kingdom (UK), 1/2012).** TWA: 10 mg/m³ 8 hours. Form: inhalable dust

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
2,2'-iminodi(ethylamine)	DNEL	Short term Inhalation	92.1 mg/m³	Workers	Systemic
	DNEL	Long term Inhalation	2.6 mg/m³	Workers	Local
	DNEL	Long term Dermal	11.4 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	15.4 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	1.1 mg/cm²	Workers	Local
	DNEL	Long term Inhalation	0.87 mg/m³	Workers	Local
	DNEL	Short term Oral	4.88 mg/kg bw/day	Consumers	Local
	DNEL	Short term Inhalation	27.5 mg/m³	Consumers	Systemic
	DNEL	Long term Dermal	4.88 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	4.6 mg/m³	Consumers	Systemic
trientine	DNEL	Short term Inhalation	5380 mg/m³	Workers	Systemic

SECTION 8: Exposure controls/personal protection

	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

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
2,2'-iminodi(ethylamine)	PNEC	Fresh water	0.56 mg/l	Assessment Factors
	PNEC	Marine	0.056 mg/l	Assessment Factors
	PNEC	Fresh water sediment	1072 mg/kg	Equilibrium Partitioning
	PNEC	Marine water sediment	107.2 mg/kg	Equilibrium Partitioning
	PNEC	Soil	214 mg/kg	Equilibrium Partitioning
	PNEC	PNECintermittent	0.32 mg/l	Assessment Factors
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

8.2 Exposure controls

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

SECTION 8: Exposure controls/personal protection

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.

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

Material of gloves for short term/splash application (10min <BTT<480min): : nitrile rubber, neoprene

(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. [Paste.]

Colour : Grey.

Odour : Slight

Odour threshold : Not available.

pH : 11 [Conc. (% w/w): 50%]

Melting point/freezing point : Not available.

Initial boiling point and boiling range : >200°C

Flash point : Closed cup: 120°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 : ≤0.015 kPa [room temperature]

Vapour density : Not available.

SECTION 9: Physical and chemical properties

Relative density : Not available.

Solubility(ies)

Water solubility : partially soluble

20 deg C

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

Auto-ignition temperature : Not available.

Decomposition temperature : >200°C

Viscosity : Dynamic (25°C): 1178000 mPa·s
Kinematic: Not available.
Kinematic (40°C): Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

Density : 1.6 g/cm³ [25°C (77°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 : strong acids, strong bases, strong oxidising agents

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:Nitrogen oxides, Burning produces obnoxious and toxic fumes., Carbon oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure
N'-(3-Aminopropyl)-N,N-dimethylpropane-1, 3-diamine	LD50 Dermal	Rabbit	1310 mg/kg	-
	LD50 Oral	Rat	1670 mg/kg	-
2,2'-iminodi(ethylamine)	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.185 mg/l	4 hours
	LD50 Dermal	Rabbit	1045 mg/kg	-
	LD50 Oral	Rat - Male	1620 mg/kg	-
	NOEC Inhalation Dusts and mists	Rat - Male, Female	0.07 mg/l	4 hours
trientine	LD50 Dermal	Rabbit - Male,	1465 mg/kg	-

SECTION 11: Toxicological information

	LD50 Oral	Female Rat - Male, Female	1716 mg/kg	-
4,4'-isopropylidenediphenol	LC50 Inhalation Dusts and mists	Rat - Male, Female	>170 mg/m³	6 hours
	LD50 Dermal	Rabbit - Male	6400 mg/kg	-
	LD50 Oral	Rat - Male, Female	2000 to 5000 mg/kg	-

Conclusion/Summary : No additional information.

Acute toxicity estimates

Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
ARALDITE 2014-1 GB HARDENER	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin	Irritant
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes	Corrosive
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	-	Rabbit	Skin	Corrosive
2,2'-iminodi(ethylamine)	No official guidelines	Rabbit	Skin	Corrosive
	No official guidelines	Rabbit	Eyes	Corrosive
trientine	-	Rabbit	Skin	Corrosive
4,4'-isopropylidenediphenol	OECD 404 Acute Dermal Irritation/ Corrosion	Rabbit	Skin	Non-irritant.
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes	Severe irritant

Conclusion/Summary

Skin : ARALDITE® 2014-1 GB HARDENER Irritating to skin.

No additional information.

Eyes : ARALDITE® 2014-1 GB HARDENER Corrosive to eyes.

No additional information.

Respiratory : No additional information.

Sensitiser

Product/ingredient name	Test	Route of exposure	Species	Result
N'-(3-Aminopropyl)-N,N-dimethylpropane-1, 3-diamine	-	skin	Guinea pig	Sensitising
2,2'-iminodi(ethylamine)	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
	No official guidelines	Respiratory	Mouse	Not sensitizing
trientine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
4,4'-isopropylidenediphenol	OECD 429 Skin Sensitisation: Local Lymph Node Assay	skin	Mouse	Not sensitizing

Conclusion/Summary

Skin : No additional information.

SECTION 11: Toxicological information

Respiratory : No additional information.

Mutagenicity

Product/ingredient name	Test	Result
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	-	Negative
2,2'-iminodi(ethylamine)	EPA CFR	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
trientine	-	Negative
4,4'-isopropylidenediphenol	-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

Conclusion/Summary : 2,2'-iminodi(ethylamine) trientine — No mutagenic effect. 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
2,2'-iminodi (ethylamine)	No official guidelines	Mouse	3 days per week	Negative	Dermal	-
trientine	OECD 451 Carcinogenicity Studies	Mouse	3 days per week	Negative	Dermal	-
4,4'-isopropylidenediphenol	-	Rat	103 weeks; 7 days per week	Negative	Oral	-

Conclusion/Summary : No additional information.

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Target organs
2,2'-iminodi(ethylamine)	OECD 421 Reproduction/ Developmental Toxicity Screening Test	Rat	Oral: 100 mg/kg NOAEL	-
4,4'-isopropylidenediphenol	-	Rat	Oral: 5 mg/kg NOAEL	-

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
trientine	OECD 414 Prenatal Developmental Toxicity Study	Rat	>750 mg/kg NOAEL
	OECD 414 Prenatal Developmental Toxicity Study	Rabbit	125 mg/kg NOAEL
4,4'-isopropylidenediphenol	-	Rat - Female	640 mg/kg NOAEL

Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

SECTION 11: Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
2,2'-iminodi(ethylamine)	Category 3	Not applicable.	Respiratory tract irritation
4,4'-isopropylidenediphenol	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : May cause burns to mouth, throat and stomach.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Eye contact : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : No specific data.

Ingestion : Adverse symptoms may include the following:
stomach pains

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact : Adverse symptoms may include the following:
pain
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

SECTION 11: Toxicological information

Product/ingredient name	Test	Result type		Result	Target organs
2,2'-iminodi(ethylamine)	OECD	NOEL	-	70 to 80 mg/kg/d	kidneys, liver
	No official guidelines	NOAEL		114 mg/kg/d	-
	No official guidelines	NOEC	Vapour	550 mg/m³	-
trientine	-	NOAEL	-	50 mg/kg/d	-
4,4'-isopropylidenediphenol	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	LOAEL	-	600 mg/kg	-
	Unknown guidelines	NOEC	Dusts and mists	10 mg/m³	respiratory tract

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	
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours	Daphnia	9.2	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours	Algae	21	mg/l
2,2'-iminodi(ethylamine)	No official guidelines	Acute	EC50	48 hours Static	Daphnia	32	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	EbC50 (biomass)	72 hours Static	Algae	1164	mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute	LC50	96 hours Semi-static	Fish	430	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOEC	72 hours Static	Algae	10	mg/l
	No official guidelines	Chronic	NOEC	3 hours Static	Bacteria	6	mg/l
	EU	Chronic	NOEC	21 days Semi-static	Daphnia	5.6	mg/l
	OECD OECD 210 - Fish, Early-Life Stage Toxicity Test	Chronic	NOEC	28 days Semi-static	Fish	10	mg/l
trientine	-	Acute	EC50	30 minutes Static	Bacteria	800	mg/l
	-	Acute	EC50	48	Daphnia	31.1	mg/l

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				hours			
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	Static 72 hours Semi-static	Algae	20	mg/l
	-	Acute	LC50	96 hours Static	Fish	330	mg/l
	OECD OECD 202: Part II (Daphnia sp., Reproduction Test	Chronic	EC50	21 days Semi-static	Daphnia	10	mg/l
4,4'-isopropylidenediphenol	-	Acute	EC50	96 hours	Algae	2.5 to 3.1	mg/l
	-	Acute	EC50	48 hours	Daphnia	3.9 to 10.2	mg/l
	-	Acute	LC50	96 hours	Fish	7.5	mg/l

Conclusion/Summary : No additional information.

12.2 Persistence and degradability

Product/ingredient name	Test	Period	Result
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	ISO ISO 7827, 1984 - Evaluation in an aqueous medium of the ultimate aerobic biodegradability of organic compounds	28 days	100 %
2,2'-iminodi(ethylamine)	OECD 301D Ready Biodegradability - Closed Bottle Test	21 days	87 %
trientine	OECD 302A Inherent Biodegradability: Modified SCAS Test	84 days	20 %
	OECD 301D Ready Biodegradability - Closed Bottle Test	28 days	0 %
4,4'-isopropylidenediphenol	-	28 days	1 to 2 %

Conclusion/Summary : 2,2'-iminodi(ethylamine) Readily biodegradable
trientine Not biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	-	-	Readily
2,2'-iminodi(ethylamine)	-	-	Readily
trientine	-	-	Not readily
4,4'-isopropylidenediphenol	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
N'-(3-Aminopropyl)-N,N-dimethylpropane-1,3-diamine	0.5	-	low
2,2'-iminodi(ethylamine)	-1.58	0.3 to 6.3	low
trientine	-1.4 to 2.9	99	low

12.4 Mobility in soil

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

Mobility : Not available.

SECTION 12: Ecological information

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. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

European waste catalogue (EWC)

Waste code	Waste designation
07 02 04*	other organic solvents, washing liquids and mother liquors

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

SECTION 14: Transport 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.	-
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

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 : Listed

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

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

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
4,4'-isopropylidenediphenol	-	-	-	Repr. 2, H361f

National regulations

References : The provision of Safety Data Sheets comes under Regulation 6 of CHIP (CHIP is the recognised abbreviation for the Chemicals Hazard Information and Packaging Regulations). This is an addition to the Health and Safety at Work Act 1974.

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

Canada inventory : All components are listed or exempted.

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) :

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

SECTION 15: Regulatory information

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

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

Classification	Justification
Skin Irrit. 2, H315	Expert judgment
Eye Dam. 1, H318	Expert judgment
Skin Sens. 1, H317	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.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H361f	Suspected of damaging fertility.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS] :

Acute Tox. 2, H330	ACUTE TOXICITY: INHALATION - Category 2
Acute Tox. 4, H302	ACUTE TOXICITY: ORAL - Category 4
Acute Tox. 4, H312	ACUTE TOXICITY: SKIN - Category 4
Aquatic Chronic 2, H411	AQUATIC TOXICITY (CHRONIC) - Category 2
Aquatic Chronic 3, H412	AQUATIC TOXICITY (CHRONIC) - Category 3
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Repr. 2, H361f	TOXIC TO REPRODUCTION [Fertility] - Category 2
Skin Corr. 1A, H314	SKIN CORROSION/IRRITATION - Category 1A
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
STOT SE 3, H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

Full text of abbreviated R phrases :
R62- Possible risk of impaired fertility.
R26- Very toxic by inhalation.
R23- Toxic by inhalation.
R21/22- Harmful in contact with skin and if swallowed.
R34- Causes burns.
R35- Causes severe burns.
R41- Risk of serious damage to eyes.
R37- Irritating to respiratory system.
R38- Irritating to skin.

SECTION 16: Other information

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

Full text of classifications [DSD/DPD] : Repr. Cat. 3 - Toxic to reproduction category 3
T+ - Very toxic
T - Toxic
C - Corrosive
Xn - Harmful
Xi - Irritant

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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.