

# 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.

<b>ARALDITE 2014-1 GB HARDENER</b>		<b>2/20</b>
Date of printing	: 22 February 2013	(M)SDS no. : 00074050
Date of issue	: 22 February 2013	Version : 2

## 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

**ARALDITE 2014-1 GB HARDENER**

**3/20**

Date of printing : 22 February 2013  
Date of issue : 22 February 2013

(M)SDS no. : 00074050  
Version : 2

**SECTION 3: Composition/information on ingredients**

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
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	[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	Aquatic Chronic 3, H412 Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 2, H361f STOT SE 3, H335 Aquatic Chronic 2, H411	[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	

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
 Date of issue : 22 February 2013 Version : 2

## 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.

**ARALDITE 2014-1 GB HARDENER**

**5/20**

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
Date of issue : 22 February 2013 Version : 2

**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".




Date of printing : 22 February 2013 (M)SDS no. : 00074050  
Date of issue : 22 February 2013 Version : 2

## SECTION 6: Accidental release measures

**6.2 Environmental precautions** : Avoid dispersal of spill 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 spill 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.

**ARALDITE 2014-1 GB HARDENER**

**7/20**

Date of printing : 22 February 2013

(M)SDS no. : 00074050

Date of issue : 22 February 2013

Version : 2

## 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	<b>EH40/2005 WELs (United Kingdom (UK), 1/2012). Absorbed through skin.</b> TWA: 4.3 mg/m <sup>3</sup> 8 hours. TWA: 1 ppm 8 hours.
4,4'-isopropylidenediphenol	<b>EH40/2005 WELs (United Kingdom (UK), 1/2012).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: inhalable dust

**Recommended monitoring procedures** : 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/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term Inhalation	2.6 mg/m <sup>3</sup>	Workers	Local
	DNEL	Long term Dermal Inhalation	11.4 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	15.4 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term Dermal Inhalation	1.1 mg/cm <sup>2</sup>	Workers	Local
	DNEL	Long term Inhalation	0.87 mg/m <sup>3</sup>	Workers	Local
	DNEL	Short term Oral	4.88 mg/kg bw/day	Consumers	Local
	DNEL	Short term Inhalation	27.5 mg/m <sup>3</sup>	Consumers	Systemic
	DNEL	Long term Dermal Inhalation	4.88 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	4.6 mg/m <sup>3</sup>	Consumers	Systemic
	DNEL	Short term Inhalation	5380 mg/m <sup>3</sup>	Workers	Systemic
	trientine	DNEL	Short term Inhalation	5380 mg/m <sup>3</sup>	Workers

Date of printing : 22 February 2013  
 Date of issue : 22 February 2013

(M)SDS no. : 00074050  
 Version : 2

### SECTION 8: Exposure controls/personal protection

DNEL	Long term Dermal	0.57 mg/kg bw/day	Workers	Systemic
DNEL	Long term Inhalation	1 mg/m <sup>3</sup>	Workers	Systemic
DNEL	Long term Dermal	0.028 mg/m <sup>3</sup>	Workers	Local
DNEL	Short term Dermal	8 mg/kg bw/day	Consumers	Systemic
DNEL	Short term Inhalation	1600 mg/m <sup>3</sup>	Consumers	Systemic
DNEL	Short term Oral	20 mg/kg bw/day	Consumers	Systemic
DNEL	Short term Dermal	1 mg/cm <sup>2</sup>	Consumers	Local
DNEL	Short term Dermal	0.25 mg/kg bw/day	Consumers	Local
DNEL	Long term Inhalation	0.29 mg/m <sup>3</sup>	Consumers	Systemic
DNEL	Long term Oral	0.41 mg/kg bw/day	Consumers	Systemic
DNEL	Long term Dermal	0.43 mg/cm <sup>2</sup>	Consumers	Local

#### Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
2,2'-iminodi(ethylamine)  trientine	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
	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.



**ARALDITE 2014-1 GB HARDENER**

**9/20**

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
 Date of issue : 22 February 2013 Version : 2

**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.

: butyl rubber, Ethyl Vinyl Alcohol Laminated (EVAL)

**Material of gloves for long term application (BTT>480min):**

: nitrile rubber, neoprene

**Material of gloves for short term/splash application (10min <BTT<480min):**

(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](http://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.

**ARALDITE 2014-1 GB HARDENER**

10/20

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
 Date of issue : 22 February 2013 Version : 2

**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<sub>ow</sub>) : 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/cm<sup>3</sup> [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	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.185 mg/l	4 hours
2,2'-iminodi(ethylamine)	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	-

**ARALDITE 2014-1 GB HARDENER**

11/20

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
 Date of issue : 22 February 2013 Version : 2

**SECTION 11: Toxicological information**

4,4'-isopropylidenediphenol	LD50 Oral	Female Rat - Male, Female	1716 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>170 mg/m <sup>3</sup>	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
trientine	No official guidelines	Rabbit	Skin	Corrosive
4,4'-isopropylidenediphenol	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Corrosive
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Skin	Non-irritant.
		Rabbit	Eyes	Severe irritant

Conclusion/Summary

**Skin** : ARALDITE® 2014-1 GB Irritating to skin.  
 HARDENER  
 No additional information.  
**Eyes** : ARALDITE® 2014-1 GB Corrosive to eyes.  
 HARDENER  
 No additional information.  
**Respiratory Sensitiser** : No additional information.

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.

**ARALDITE 2014-1 GB HARDENER**

12/20

Date of printing : 22 February 2013

(M)SDS no. : 00074050


Date of issue : 22 February 2013


Version : 2

**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 OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative Negative Negative
trientine	-	Negative
4,4'-isopropylidenediphenol	-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative


**Conclusion/Summary** :  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'-iminodi(ethylamine) trientine	No official guidelines	Mouse	3 days per week	Negative	Dermal	-
	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'-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)**

**ARALDITE 2014-1 GB HARDENER**

Date of printing : 22 February 2013

(M)SDS no. : 00074050

Date of issue : 22 February 2013

Version : 2

13/20

**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



**ARALDITE 2014-1 GB HARDENER**

14/20

Date of printing : 22 February 2013

(M)SDS no. : 00074050

Date of issue : 22 February 2013

Version : 2

**SECTION 11: Toxicological information**

Product/ingredient name	Test	Result type	Result	Target organs
2,2'-iminodi(ethylamine)  trientine 4,4'-isopropylidenediphenol	OECD	NOEL	70 to 80 mg/kg/d	kidneys, liver
	No official guidelines	NOAEL	114 mg/kg/d	-
	No official guidelines	NOEC	550 mg/m <sup>3</sup>	-
	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOAEL	50 mg/kg/d	-
	Unknown guidelines	LOAEL	600 mg/kg	-
		NOEC	10 mg/m <sup>3</sup>	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 <i>Daphnia</i> 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	Daphnia	32 mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute EbC50 (biomass)	72 hours	Algae	1164 mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute LC50	96 hours	Fish	430 mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic NOEC	72 hours	Algae	10 mg/l
	No official guidelines	Chronic NOEC	3 hours	Bacteria	6 mg/l
	EU	Chronic NOEC	21 days	Daphnia	5.6 mg/l
	OECD OECD 210 - Fish, Early-Life Stage Toxicity Test	Chronic NOEC	28 days	Fish	10 mg/l
trientine	-	Acute EC50	30 minutes	Bacteria	800 mg/l
	-	Acute EC50	48 minutes	Daphnia	31.1 mg/l

**ARALDITE 2014-1 GB HARDENER**

15/20

Date of printing : 22 February 2013  
Date of issue : 22 February 2013

(M)SDS no. : 00074050  
Version : 2

**SECTION 12: Ecological information**

	Acute	ErC50 (growth rate)	hours Static	Algae	mg/l
OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	20 mg/l
-	Acute	LC50	96 hours Semi-static	Fish	330 mg/l
OECD OECD 202: Part II (Daphnia sp., Reproduction Test)	Chronic	EC50	21 days Static	Daphnia	10 mg/l
-	Acute	EC50	96 hours Semi-static	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
<del>M</del> -(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 %
4,4'-isopropylidenediphenol	OECD 301D Ready Biodegradability - Closed Bottle Test	28 days	0 %
4,4'-isopropylidenediphenol	-	28 days	1 to 2 %

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

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<del>M</del> -(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 <sub>ow</sub>	BCF	Potential
<del>M</del> -(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<sub>oc</sub>)** : Not available.  
**Mobility** : Not available.

<b>ARALDITE 2014-1 GB HARDENER</b>	<b>16/20</b>
Date of printing : 22 February 2013	(M)SDS no. : 00074050
Date of issue : 22 February 2013	Version : 2

## 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

<b>14.1 UN number</b>	<b>14.2 UN proper shipping name</b>
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

**ARALDITE 2014-1 GB HARDENER**

**17/20**

Date of printing : 22 February 2013  
 Date of issue : 22 February 2013

(M)SDS no. : 00074050  
 Version : 2

**SECTION 14: Transport information**

ADR/RID	-	-	No.	<p><b>Transport within user's premises:</b>                  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.</p>	-
IMDG	-	-	No.	<p><b>Transport within user's premises:</b>                  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.</p>	-
IATA	-	-	No.	<p><b>Transport within user's premises:</b>                  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.</p>	-

14.7 Transport in bulk : Not applicable.

according to Annex II of  
 MARPOL 73/78 and the IBC  
 Code

<b>ARALDITE 2014-1 GB HARDENER</b>		<b>18/20</b>
Date of printing	: 22 February 2013	(M)SDS no. : 00074050
Date of issue	: 22 February 2013	Version : 2

## 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** : Not applicable.

on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

##### 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



**ARALDITE 2014-1 GB HARDENER**

19/20

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
 Date of issue : 22 February 2013 Version : 2

**SECTION 15: Regulatory information**

Chemical Weapons : Not listed  
 Convention List Schedule III  
 Chemicals

**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 Eye Dam. 1, H318 Skin Sens. 1, H317	Expert judgment Expert judgment Expert judgment

**Full text of abbreviated H statements** : ~~R~~302 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]** : ~~A~~cute 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** : ~~R~~62- 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.

**ARALDITE 2014-1 GB HARDENER**

20/20

Date of printing : 22 February 2013 (M)SDS no. : 00074050  
Date of issue : 22 February 2013 Version : 2

**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 : Repr. Cat. 3 - Toxic to reproduction category 3  
[DSD/DPD]

T+ - Very toxic  
T - Toxic  
C - Corrosive  
Xn - Harmful  
Xi - Irritant

(M)SDS no. : 00074050

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