

SAFETY DATA SHEET

ARALDITE® 2015 GB HARDENER



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

1.1 Product identifier

Product name : ARALDITE® 2015 GB HARDENER
Registration number : Not available.
Product code : 00074052
Product description : Not available.

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

Product use : Component for adhesive applications

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
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

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

Acute Tox. 4, H332
Skin Corr. 1B, H314
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.

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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.

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 : Harmful if inhaled.
Causes severe skin burns and eye damage.
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. Wear protective clothing.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Not applicable.

Hazardous ingredients : diethylenetriamine

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 : Not available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

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SECTION 3: Composition/information on ingredients

Product/ingredient name	Identifiers	%	<u>Classification</u>		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
2-propenenitrile polymer with 1, 3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated diethylenetriamine	CAS: 68683-29-4 EC: Not available.	13-30	R43	Skin Irrit. 2, H315 Skin Sens. 1, H317	[1]
2-piperazin-1-ylethylamine	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]
2-piperazin-1-ylethylamine	CAS: 140-31-8 EC: 205-411-0	1-3	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4, H302 Acute Tox. 3, H311 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
2,4,6-tris (dimethylaminomethyl) phenol	CAS: 90-72-2 EC: 202-013-9	1-3	Xn; R22 C; R34 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	0.1-1	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 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

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.

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SECTION 4: First aid measures

- | | |
|-----------------------------------|---|
| 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 | : Harmful if inhaled. 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 severe burns. 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. |
| Skin contact | : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur |
| Ingestion | : Adverse symptoms may include the following:
stomach pains |

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SECTION 4: First aid measures

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".

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

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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 (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

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. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 : Storage class 8, Corrosive substances
Huntsman Advanced Materials

7.3 Specific end use(s)

- Recommendations** : Not available.
Industrial sector specific solutions : Not available.

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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), 8/2007). Absorbed through skin. TWA: 4.3 mg/m ³ 8 hour(s). TWA: 1 ppm 8 hour(s).
4,4'-isopropylidenediphenol	EH40/2005 WELs (United Kingdom (UK), 1/2012). TWA: 10 mg/m ³ 8 hour(s). 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 European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

No DELs available.

Predicted effect concentrations

No PECs available.

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. 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.

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)

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SECTION 8: Exposure controls/personal protection

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.

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 : Cream

Odour : Amine-like.

Odour threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Initial boiling point and boiling range : >200°C

Flash point : Closed cup: >100°C [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
Open cup: 120°C

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 : <0.049 kPa [room temperature]

Vapour density : Not available.

Relative density : Not available.

Solubility(ies)

Water solubility : practically insoluble

20 deg C

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SECTION 9: Physical and chemical properties

Other : Almost insoluble in water
Partition coefficient: n-octanol/ water (LogK_{ow}) : Not available.
Auto-ignition temperature : Not available.
Decomposition temperature : >200°C
Viscosity :
Explosive properties : Not available.
Oxidising properties : Not available.

9.2 Other information

Density : 1.4 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: Burning produces obnoxious and toxic fumes., Carbon oxides, Nitrogen oxides

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

Product/ingredient name	Endpoint	Species	Result	Exposure
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[2-(1-piperazinyl)ethyl]amino butyl-terminated	LD50 Dermal	Rabbit	>3 g/kg	-
Bis(isopropyl)naphthalene	LD50 Oral	Rat	>15.4 g/kg	-
	LD50 Dermal	Rat - Male, Female	>4500 mg/kg	-
	LD50 Oral	Rat - Male, Female	4130 to 4320 mg/kg	-
2,2'-iminodi(ethylamine)	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.185 mg/l	4 hours
2-piperazin-1-ylethylamine	LD50 Dermal	Rabbit	1045 mg/kg	-
	LD50 Oral	Rat - Male	1620 mg/kg	-
	LD50 Dermal	Rabbit	866 mg/kg	-
	LD50 Oral	Rabbit - Male	2097 mg/kg	-
2,4,6-tris	LD50 Dermal	Rat - Male	>971 mg/kg	-

Date of issue / Date of revision : 9/9/2014.

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SECTION 11: Toxicological information

(dimethylaminomethyl) phenol	LD50 Oral	Rat - Male, Female	2169 mg/kg	-
4,4'-isopropylidenediphenol	LC50 Inhalation Dusts and mists	Rat - Male, Female	>170 mg/m ³	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

Route	ATE value
Oral	10967.9 mg/kg
Dermal	13422.9 mg/kg
Inhalation (dusts and mists)	3.119 mg/l

Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[2-(1-piperazinyl)ethyl]amino butyl-terminated	Unknown guidelines	Rabbit	Eyes	Mild irritant
2,2'-iminodi(ethylamine)	Unknown guidelines	Rabbit	Skin	Moderate irritant
2-piperazin-1-ylethylamine	No official guidelines	Rabbit	Skin	Corrosive
	No official guidelines	Rabbit	Eyes	Corrosive
	No official guidelines	Rabbit	Skin	Corrosive
	No official guidelines	Rabbit	Eyes	Severe irritant
2,4,6-tris (dimethylaminomethyl) phenol	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Corrosive
4,4'-isopropylidenediphenol	EPA CFR	Rabbit	Eyes	Corrosive
	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Non-irritant.
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Eyes	Severe irritant

Conclusion/Summary**Skin**

: 2-Propenenitrile, Irritating to skin.
polymer with 1,
3-butadiene,
1-cyano-1-methyl-4-oxo-4-
[[2-(1-piperazinyl)ethyl]
amino]butyl-terminated
2,2'-iminodi(ethylamine) Corrosive to the skin.
2-piperazin-1-ylethylamine Corrosive to eyes and skin.
2,4,6-tris Corrosive to the skin.
(dimethylaminomethyl)
phenol
4,4'-
isopropylidenediphenol Non-irritating to the skin.

Eyes

:

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2-Propenenitrile, polymer with 1, 3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated
 2,2'-iminodi(ethylamine) Slightly irritating to the eyes.
 2-piperazin-1-ylethylamine Corrosive to eyes.
 2,4,6-tris Corrosive to eyes and skin.
 (dimethylaminomethyl) phenol Corrosive to eyes.
 4,4'-isopropylidenediphenol Severely irritating to eyes.

Respiratory : No additional information.

Sensitiser

Product/ingredient name	Test	Route of exposure	Species	Result
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
Bis(isopropyl)naphthalene	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
2,2'-iminodi(ethylamine)	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
	No official guidelines	Respiratory	Mouse	Not sensitizing
2-piperazin-1-ylethylamine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising
2,4,6-tris (dimethylaminomethyl) phenol	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
4,4'-isopropylidenediphenol	OECD 429 Skin Sensitisation: Local Lymph Node Assay	skin	Mouse	Not sensitizing

Conclusion/Summary

Skin : No additional information.

Respiratory : No additional information.

Mutagenicity

Product/ingredient name	Test	Result
Bis(isopropyl)naphthalene	OECD 471 Bacterial Reverse Mutation Test	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
2,2'-iminodi(ethylamine)	EPA CFR	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
2-piperazin-1-ylethylamine	OECD 471 Bacterial Reverse Mutation Test	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Negative

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2,4,6-tris (dimethylaminomethyl) phenol	OECD 482 Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells in vitro	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
	OECD 471 Bacterial Reverse Mutation Test	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Negative
4,4'-isopropylidenediphenol	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Negative
	-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

Conclusion/Summary : No additional information.

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs
2,2'-iminodi (ethylamine) 4,4'- isopropylidenediphenol	No official guidelines	Mouse	3 days per week	Negative	Dermal	-
	-	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	-
2-piperazin-1-ylethylamine	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test	Rat	Oral: 151 to 285 mg/kg NOAEL	-
2,4,6-tris (dimethylaminomethyl) phenol	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test	Rat	Oral: NOEL	-
4,4'-isopropylidenediphenol	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Oral: 5 mg/kg NOAEL	-

Conclusion/Summary : No additional information.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Bis(isopropyl)naphthalene 2-piperazin-1-ylethylamine	EU	Rat - Female	625 mg/kg NOEL
	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test	Rat - Male, Female	>899 mg/kg NOAEL
4,4'-isopropylidenediphenol	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Female	640 mg/kg NOAEL

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Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

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

Product/ingredient name	Result
naphthalene, bis(1-methylethyl)-	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Inhalation** : Harmful if inhaled. 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 severe burns. 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

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Product/ingredient name	Test	Result type	Result	Target organs
Bis(isopropyl)naphthalene 2,2'-iminodi(ethylamine)	- OECD	NOAEL - NOEL -	170 mg/kg 70 to 80 mg/kg/d	- kidneys, liver
	No official guidelines	NOAEL	114 mg/kg/d	-
2-piperazin-1-ylethylamine	No official guidelines OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	NOEC Vapour NOAEL -	550 mg/m ³ 151 to 285 mg/kg/d	- -
2,4,6-tris (dimethylaminomethyl) phenol	OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study	NOAEL	>1000 mg/ kg/d	-
	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	NOEL -	15 mg/kg	brain, liver, spleen
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/m ³	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
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino] butyl-terminated	OECD 201 Alga, Growth Inhibition Test	Acute EC50	72 hours	Algae	>1000 mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours	Daphnia	<1000 mg/l
Bis(isopropyl)naphthalene	OECD 202 Part I (<i>Daphnia</i> sp., Acute Immobilisation test)	Acute EC50	48 hours Static	Daphnia	>0.16 mg/l
	OECD 202 Part I (<i>Daphnia</i> sp., Acute Immobilisation test)	Acute EL50	48 hours Semi-static	Daphnia	1.7 mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute LC50	96 hours	Fish	>0.5 mg/l

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2,2'-iminodi(ethylamine)	OECD OECD 202: Part II (Daphnia sp., Reproduction Test DIN	Chronic NOEC	Semi-static 21 days	Daphnia	0.013	mg/l
		Chronic NOECr	72 hours	Algae	0.15	mg/l
	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
2-piperazin-1-ylethylamine	EU	Chronic NOEC	21 days	Daphnia	5.6	mg/l
	OECD OECD 210 - Fish, Early-Life Stage Toxicity Test	Chronic NOEC	Semi-static 28 days	Fish	10	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute EC50	72 hours	Algae	>1000	mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours	Daphnia	58	mg/l
	-	Acute LC50	96 hours	Fish	2190	mg/l
	No official guidelines	Chronic EC10	2 hours	Bacteria	250	mg/l
	-	Chronic EC20	1 hours	Bacteria	1600	mg/l
2,4,6-tris (dimethylaminomethyl) phenol	ISO ISO 9509:2006 - Toxicity test for assessing the inhibition of nitrification of activated sludge microorganisms	Chronic EC50	2 hours	Bacteria	511	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute ErC50 (growth rate)	72 hours	Algae	84	mg/l
	Unknown guidelines	Acute LC50	96 hours	Daphnia	718	mg/l
	-	Acute LC50	96 hours	Fish	175	mg/l
4,4'-isopropylidenediphenol	-	Chronic NOEC	72 hours	Algae	6.25	mg/l
	-	Acute EC50	96 hours	Algae	2.5 to 3.1	mg/l
	-	Acute EC50	48 hours	Daphnia	3.9 to 10.2	mg/l

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	- EPA OPPTS	Acute LC50 Chronic NOEC	96 hours 444 days Flow- through	Fish Fish	7.5 mg/l 0.016 mg/l
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Conclusion/Summary : No additional information.

12.2 Persistence and degradability

Product/ingredient name	Test	Period	Result
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[2-(1-piperazinyl)ethyl]amino butyl-terminated	-	- days	- %
Bis(isopropyl)naphthalene 2,2'-iminodi(ethylamine)	OECD OECD 301D Ready Biodegradability - Closed Bottle Test	56 days 21 days	30 to 35 % 87 %
2-piperazin-1-ylethylamine	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	0 %
2,4,6-tris (dimethylaminomethyl) phenol	OECD 301D Ready Biodegradability - Closed Bottle Test	28 days	4 %
4,4'-isopropylidenediphenol	-	28 days	1 to 2 %

Conclusion/Summary : No additional information.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2,2'-iminodi(ethylamine)	-	50%; 0.11 day(s)	Readily
2-piperazin-1-ylethylamine	-	50%; 0.08 day(s)	Not readily
2,4,6-tris (dimethylaminomethyl) phenol	-	-	Not readily
4,4'-isopropylidenediphenol	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Bis(isopropyl)naphthalene	6.081	770 to 6400	high
2,2'-iminodi(ethylamine)	-1.58	0.3 to 6.3	low
2-piperazin-1-ylethylamine	-1.48	-	low
2,4,6-tris (dimethylaminomethyl) phenol	0.219	-	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.

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SECTION 12: Ecological information**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. Significant quantities of waste product residues should not be disposed of via the foul 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.

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 spill 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	UN2735	Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine , N-aminoethyl piperazine)
IMDG	UN2735	Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine , N-aminoethyl piperazine). Marine pollutant (DIISOPROPYLNAPHTHALENE, Dimer fatty acid (c18) polyamidoamine resin)
IATA	UN2735	Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine , N-aminoethyl piperazine)




	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information

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ADR/RID	8		II	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.	<u>Hazard identification number</u> 80 <u>Special provisions</u> 274 <u>Tunnel code</u> E
IMDG	8		II	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.	<u>Emergency schedules (EmS)</u> F-A S-B
IATA	8		II	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.	<u>Passenger and Cargo Aircraft</u> Quantity limitation: 1 L Packaging instructions: 851 <u>Cargo Aircraft Only</u> Quantity limitation: 30 L Packaging instructions: 855

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

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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 : 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 : Not 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 : Listed or exempted in Japan Chemical Substance Control Law.

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

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

**Philippines inventory
 (PICCS)** : All components are listed or exempted.

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

**Chemical Weapons
 Convention List Schedule I
 Chemicals** : Not listed

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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

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

Classification	Justification
Acute Tox. 4, H332 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317	Calculation method Calculation method Calculation method Calculation method

Full text of abbreviated H statements : H302 Harmful if swallowed.
 H311 Toxic in contact with skin.
 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.
 H330 Fatal if inhaled.
 H332 Harmful if inhaled.
 H335 May cause respiratory irritation.
 H361f Suspected of damaging fertility.
 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. 3, H311 ACUTE TOXICITY: SKIN - Category 3
 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 3, H412 AQUATIC TOXICITY (CHRONIC) - Category 3
 Eye Dam. 1, H318 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
 Repr. 2, H361f TOXIC TO REPRODUCTION [Fertility] - 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
 STOT SE 3, H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

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SECTION 16: Other information

Full text of abbreviated R phrases : R62- Possible risk of impaired fertility.
 R26- Very toxic by inhalation.
 R23- Toxic by inhalation.
 R22- Harmful if swallowed.
 R21/22- Harmful in contact with skin and if swallowed.
 R34- Causes burns.
 R41- Risk of serious damage to eyes.
 R37- Irritating to respiratory system.
 R38- Irritating to 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

(M)SDS no. : 00074052

Date of printing : 9/9/2014.

Date of issue/ Date of revision : 9/9/2014.

Date of previous issue : 9/9/2014.

Version : 3.01

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