

SAFETY DATA SHEET

ARALDITE® 2014-1 C RESIN

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

1.1 Product identifier

Product name : ARALDITE® 2014-1 C RESIN
Product code : 00070741
Product description :

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

Product use : Resin 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

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
 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 Irrit. 2, H319
 Skin Sens. 1, H317
 Aquatic Chronic 2, H411

Ingredients of unknown toxicity : Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 7.7%

Ingredients of unknown ecotoxicity : Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 10.4%

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

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

Classification : Xi; R36/38
 R43
 N; R51/53

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

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

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

Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 2: Hazards identification

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

2.2 Label elements

Hazard pictograms



Signal word : Warning

Hazard statements : Causes skin irritation.
 Causes serious eye irritation.
 May cause an allergic skin reaction.
 Toxic to aquatic life with long lasting effects.

Precautionary statements

General

Prevention

Response

Storage

Disposal

Hazardous ingredients

Supplemental label elements

Supplemental label elements

Special packaging requirements

Containers to be fitted with child-resistant fastenings

Tactile warning of danger

- :
- : Wear protective gloves: >8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL), nitrile rubber, neoprene, Polyvinyl Chloride (PVC). Wear eye or face protection. Avoid release to the environment.
- : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- : Not applicable.
- : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- : reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)
- : Not applicable.
- : Contains epoxy constituents. See information supplied by the manufacturer.
- : Not applicable.
- : Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : Not available.

Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 3: Composition/information on ingredients

Substance/mixture : Mixture

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

Type

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

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

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : 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. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.

ARALDITE 2014-1 C RESIN

4/16

Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 4: First aid measures

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

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

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. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

ARALDITE 2014-1 C RESIN

5/16

Date of printing : 10 January 2012 **MSDS no.** : 00070741

Date of issue : 10 January 2012 **Version** : 1.01

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). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

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 (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 ingest. Avoid breathing vapour or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

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

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

Storage hazard class Huntsman Advanced Materials : Storage class 10, Environmentally hazardous liquids

7.3 Specific end use(s)

Date of issue / Date of revision : 1/10/2012.

5/16

ARALDITE 2014-1 C RESIN

6/16

Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 7: Handling and storage

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

SECTION 8: Exposure controls/personal protection

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

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Workplace exposure limits (for total dust and inhalable quartz dust) must be complied with. If this is not possible, then suitable dust masks must be worn.

W A R N I N G ! This product contains quartz, which has been classified by IARC as carcinogenic for humans (Group 1), and which can cause silicosis and lung cancer following exposure to respirable dust. It is therefore important to take particular care to avoid inhalation exposure when mechanically processing cured material (e.g. grinding, sanding, sawing).

QUARTZ (CAS RN 14808-60-7):

United Kingdom: TWA: 0.1 mg/m³ 8 hour(s). Form: respirable dust

Ireland: OELV-8hr: 0.1 mg/m³ 8 hour(s). Form: respirable dust

Switzerland: TWA: 0.15 mg/m³ 8 hour(s). Form: respirable dust

Australia: TWA: 0.1 mg/m³ 8 hour(s)

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 : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure 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

ARALDITE 2014-1 C RESIN**7/16**

Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 8: Exposure controls/personal 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), nitrile rubber, neoprene, Polyvinyl Chloride (PVC)
- Material of gloves for short term/splash application (10min<BTT<480min):** : butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL), nitrile rubber, neoprene, Polyvinyl Chloride (PVC)
- (BTT = Break Through Time)**
- Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US). Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at www.gisbau.de.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. organic vapour (Type A) and particulate filter
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**Appearance

- Physical state** : Liquid.
- Colour** : Beige.
- Odour** : Slight
- Odour threshold** : Not available.
- pH** : 7 [Conc. (% w/w): 50%]
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : >200°C
- Flash point** : Closed cup: >100°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** : Not available.
- Vapour density** : Not available.

ARALDITE 2014-1 C RESIN**8/16**

Date of printing : 10 January 2012 **MSDS no.** : 00070741
Date of issue : 10 January 2012 **Version** : 1.01

SECTION 9: Physical and chemical properties

Relative density : Not available.
Solubility(ies)
Water solubility : practically insoluble
20 deg C
Partition coefficient: n-octanol/water (LogK_{ow}) : Not available.
Auto-ignition temperature : Not available.
Decomposition temperature : >200°C
Viscosity : Dynamic: 92800 mPa·s 25 deg C
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.

Carbon oxides, Burning produces obnoxious and toxic fumes.

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

Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
Mild irritant	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	-	-
Mild irritant	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	-	-
Non-irritant.	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	-	-
Mild irritant	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	-	-
Non-irritant.	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	-	-

Date of issue / Date of revision : 1/10/2012.

8/16

ARALDITE 2014-1 C RESIN

9/16

Date of printing : 10 January 2012 **MSDS no.** : 00070741
Date of issue : 10 January 2012 **Version** : 1.01

SECTION 11: Toxicological information

Severe irritant	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	-
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Conclusion/Summary

Skin : No additional information.
Eyes : No additional information.
Respiratory : No additional information.

Sensitiser

Product/ingredient name	Test	Route of exposure	Species	Result
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 429 Skin Sensitisation: Local Lymph Node Assay	skin	Mouse	Sensitising
bisphenol F-epoxy resin	OECD 429 Skin Sensitisation: Local Lymph Node Assay	skin	Mouse	Sensitising
butanedioldiglycidyl ether	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising

Conclusion/Summary : No additional information.

Mutagenicity

Product/ingredient name	Test	Result
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 471 Bacterial Reverse Mutation Test	Positive
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Positive
	OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test	Negative
	EPA OPPTS	Negative
bisphenol F-epoxy resin	OECD 471 Bacterial Reverse Mutation Test	Positive
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Positive
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative
	OECD 486 Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo	Negative
butanedioldiglycidyl ether	OECD 471 Bacterial Reverse Mutation Test	Positive
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs

ARALDITE 2014-1 C RESIN

10/16

Date of printing : 10 January 2012 **MSDS no.** : 00070741
Date of issue : 10 January 2012 **Version** : 1.01

SECTION 11: Toxicological information

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Rat	2 years; 7 days per week	Negative	Oral	-
	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Rat	2 years; 5 days per week	Negative	Dermal	-
	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Mouse	2 years; 3 days per week	Negative	Dermal	-

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Target organs
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700) bisphenol F-epoxy resin	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Oral: 540 mg/kg NOEL :	-
	OECD 416 Two-Generation Reproduction Toxicity Study	Rat	Oral: 540 mg/kg NOEL :	-

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	>540 mg/kg NOEL :
	EPA CFR	Rabbit - Female	>300 mg/kg NOEL :
	OECD 414 Prenatal Developmental Toxicity Study	Rabbit - Female	180 mg/kg NOAEL
bisphenol F-epoxy resin	EPA CFR	Rabbit - Female	>300 mg/kg NOEL :

Specific target organ toxicity (single exposure)

Not available.

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** : No known significant effects or critical hazards.
- Ingestion** : Irritating to mouth, throat and stomach.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Eye contact** : Causes serious eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics

- Inhalation** : No specific data.
- Ingestion** : No specific data.

ARALDITE 2014-1 C RESIN

11/16

Date of printing : 10 January 2012 MSDS no. : 00070741
 Date of issue : 10 January 2012 Version : 1.01

SECTION 11: Toxicological information

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

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

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

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Result type	Result	Target organs
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	NOAEL -	50 mg/kg	-
	OECD 411 Subchronic Dermal Toxicity: 90-day Study	NOEL :	10 mg/kg	-
bisphenol F-epoxy resin	OECD 411 Subchronic Dermal Toxicity: 90-day Study	NOAEL	100 mg/kg	-
	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	NOAEL -	250 mg/kg	-
butanedioldiglycidyl ether	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	NOAEL -	200 mg/kg	-

Conclusion/Summary : Not available.
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
REACTION PRODUCT: BISPHENOL A-(EPICHLORHYDRIN); EPOXY RESIN (NUMBER AVERAGE MOLECULAR WEIGHT < 700)	-	Acute EC50	72 hours Static	Algae	9.4 mg/L
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours Static	Daphnia	1.7 mg/L

ARALDITE 2014-1 C RESIN

12/16

Date of printing : 10 January 2012 MSDS no. : 00070741
 Date of issue : 10 January 2012 Version : 1.01

SECTION 12: Ecological information

BISPHENOL F-EPOXY RESIN (NLP)	-	Acute IC50	3 hours Static	Bacteria	>100	mg/L
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Static	Fish	1.5	mg/L
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	0.3	mg/L
	OECD 201 Alga, Growth Inhibition Test	Acute EC50	72 hours Static	Algae	1.8	mg/L
	OECD OECD 202: Part I (Daphnia sp., Acute Immobilisation test)	Acute EC50	48 hours Static	Daphnia	1.6	mg/L
	-	Acute IC50	3 hours Static	Bacteria	>100	mg/L
BUTANEDIOLDIGLYCIDYL ETHER	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Semi-static	Fish	0.55	mg/L
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	0.3	mg/L
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	24 hours Static	Daphnia	75	mg/L
	OECD 201 Alga, Growth Inhibition Test	Acute EL50	72 hours Static	Algae	>160	mg/L
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute IC50	3 hours Static	Bacteria	>100	mg/L
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours Static	Fish	24	mg/L

12.2 Persistence and degradability

Product/ingredient name	Test	Period	Result
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD Derived from OECD 301F (Biodegradation Test)	28 days	5 %
bisphenol F-epoxy resin	EU	28 days	0 %
butanedioldiglycidyl ether	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	43 %

Conclusion/Summary : reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700): Not readily biodegradable.

12.3 Bioaccumulative potential

Not available.

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.

ARALDITE 2014-1 C RESIN

13/16

Date of printing : 10 January 2012 MSDS no. : 00070741
 Date of issue : 10 January 2012 Version : 1.01

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 08*	other still bottoms and reaction residues

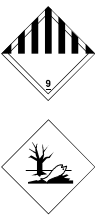
Packaging

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	UN3082	Environmentally hazardous substance, liquid, n.o.s. BISPHENOL A/F EPOXY RESIN
IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A/F EPOXY RESIN) Marine pollutant (reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700), bisphenol F-epoxy resin)
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A/F EPOXY RESIN)





	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information
ADR/RID	9 	III	Yes.	Not available.	<u>Hazard identification number</u> 90 <u>Special provisions</u> 274 335 601 <u>Tunnel code</u> E

ARALDITE 2014-1 C RESIN

14/16

Date of printing : 10 January 2012 MSDS no. : 00070741
 Date of issue : 10 January 2012 Version : 1.01

SECTION 14: Transport information

IMDG	9	 	III	Yes.	Not available.	Emergency schedules (EmS) F-A, S-F
IATA	9	 	III	Yes.	Not available.	Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 964 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 964

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)

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 : Not listed

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

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

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.

International regulations

ARALDITE 2014-1 C RESIN

15/16

Date of printing : 10 January 2012 **MSDS no.** : 00070741
Date of issue : 10 January 2012 **Version** : 1.01

SECTION 15: Regulatory information

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

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

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

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

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

Classification	Justification
Skin Irrit. 2, H315	Expert judgment
Eye Irrit. 2, H319	Expert judgment
Skin Sens. 1, H317	Expert judgment
Aquatic Chronic 2, H411	Expert judgment

Full text of abbreviated H statements : H312 Harmful in contact with skin.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H332 Harmful if inhaled.
 H411 Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS] : Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 4
 Acute Tox. 4, H332 ACUTE TOXICITY: INHALATION - Category 4
 Aquatic Chronic 2, H411 AQUATIC TOXICITY (CHRONIC) - Category 2
 Eye Irrit. 2, H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2
 Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1

Full text of abbreviated R phrases : R20/21- Harmful by inhalation and in contact with skin.
 R38- Irritating to skin.
 R36/38- Irritating to eyes and skin.
 R43- May cause sensitisation by skin contact.
 R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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

MSDS no. : 00070741
Date of printing : 1/10/2012.
Date of issue/ Date of revision : 1/10/2012.

Date of issue / Date of revision : 1/10/2012.

15/16

ARALDITE 2014-1 C RESIN		16/16	
Date of printing	: 10 January 2012	MSDS no.	: 00070741
Date of issue	: 10 January 2012	Version	: 1.01

SECTION 16: Other information

Date of previous issue : 10/28/2011.
Version : 1.01

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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.

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SAFETY DATA SHEET



ARALDITE® 2014-1 C HARDENER

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

1.1 Product identifier

Product name : ARALDITE® 2014-1 C HARDENER
Product code : 00070742
Product description :

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

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
 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.

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.

ARALDITE 2014-1 C HARDENER

2/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742

Date of issue : 10 January 2012 **Version** : 1.03

SECTION 2: Hazards identification

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

Precautionary statements

General :

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

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.

ARALDITE 2014-1 C HARDENER

3/15

Date of printing	: 10 January 2012	MSDS no.	: 00070742
Date of issue	: 10 January 2012	Version	: 1.03

SECTION 3: Composition/information on ingredients

Substance/mixture : Mixture

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

Type

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

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

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.

ARALDITE 2014-1 C HARDENER

4/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742

Date of issue : 10 January 2012 **Version** : 1.03

SECTION 4: First aid measures

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.

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.

ARALDITE 2014-1 C HARDENER

5/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742

Date of issue : 10 January 2012 **Version** : 1.03

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

- 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. 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.

ARALDITE 2014-1 C HARDENER

6/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742
Date of issue : 10 January 2012 **Version** : 1.03

SECTION 7: Handling and storage

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.

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), 8/2007). Absorbed through skin. TWA: 4.3 mg/m ³ 8 hour(s). TWA: 1 ppm 8 hour(s).

Workplace exposure limits (for total dust and inhalable quartz dust) must be complied with. If this is not possible, then suitable dust masks must be worn.

W A R N I N G ! This product contains quartz, which has been classified by IARC as carcinogenic for humans (Group 1), and which can cause silicosis and lung cancer following exposure to respirable dust. It is therefore important to take particular care to avoid inhalation exposure when mechanically processing cured material (e.g. grinding, sanding, sawing).

QUARTZ (CAS RN 14808-60-7):

United Kingdom: TWA: 0.1 mg/m³ 8 hour(s). Form: respirable dust

Ireland: OELV-8hr: 0.1 mg/m³ 8 hour(s). Form: respirable dust

Switzerland: TWA: 0.15 mg/m³ 8 hour(s). Form: respirable dust

Australia: TWA: 0.1 mg/m³ 8 hour(s)

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

ARALDITE 2014-1 C HARDENER

7/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742

Date of issue : 10 January 2012 **Version** : 1.03

SECTION 8: Exposure controls/personal protection

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.

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. organic vapour (Type A) and particulate filter

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.

ARALDITE 2014-1 C HARDENER

8/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742
Date of issue : 10 January 2012 **Version** : 1.03

SECTION 9: Physical and chemical properties

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 [20°C]

Vapour density : Not available.

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

ARALDITE 2014-1 C HARDENER

9/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742
Date of issue : 10 January 2012 **Version** : 1.03

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute toxicity estimates

Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
Corrosive	-	Rabbit	-	-
Severe irritant	-	Rabbit	-	-
Mild irritant	-	Rabbit	-	-

Conclusion/Summary

Skin : No additional information.

Eyes : No additional information.

Respiratory : No additional information.

Sensitiser

Product/ingredient name	Test	Route of exposure	Species	Result
diethylenetriamine	-	skin	Guinea pig	Sensitising
triethylenetetramine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising

Conclusion/Summary : No additional information.

Mutagenicity

Product/ingredient name	Test	Result
diethylenetriamine	-	Negative
	-	Negative
	-	Negative
triethylenetetramine	-	Negative
	-	Positive
	-	Negative
4,4'-isopropylidenediphenol	-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs
diethylenetriamine	-	Mouse	3 days per week	Negative	Dermal	-
4,4'-isopropylidenediphenol	-	Rat	103 weeks; 7 days per week	Negative	Oral	-

Reproductive toxicity

Product/ingredient name	Test	Species	Result/Result type	Target organs
4,4'-isopropylidenediphenol	-	Rat	Oral: 5 mg/kg NOAEL	-

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
4,4'-isopropylidenediphenol	-	Rat - Female	640 mg/kg NOAEL

ARALDITE 2014-1 C HARDENER

10/15

Date of printing : 10 January 2012 MSDS no. : 00070742
 Date of issue : 10 January 2012 Version : 1.03

SECTION 11: Toxicological information

Specific target organ toxicity (single exposure)

Not available.

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

Product/ingredient name	Test	Result type	Result	Target organs
diethylenetriamine	-	NOEL : -	70 to 80 mg/kg/d	kidneys, liver
	-	NOAEL	114 mg/kg/d	-
triethylenetetramine	-	NOEC Vapour	550 mg/m3	-
4,4'-isopropylidenediphenol	-	NOAEL	50 mg/kg/d	-
	-	NOAEL	75 mg/kg	-
	-	NOEC Dusts and mists	10 mg/m3	respiratory tract

Conclusion/Summary : Not available.

ARALDITE 2014-1 C HARDENER

11/15

Date of printing : 10 January 2012 MSDS no. : 00070742
 Date of issue : 10 January 2012 Version : 1.03

SECTION 11: Toxicological 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
DIETHYLENETRIAMINE	-	Acute EC50	48 hours	Daphnia	17 mg/L
	-	Acute LC50	96 hours	Fish	332 mg/L
	-	Chronic NOEC	21 days Semi-static	Daphnia	5.6 mg/L
TRIETHYLENETETRAMINE	-	Acute EC50	30 minutes Static	Bacteria	800 mg/L
	-	Acute EC50	48 hours Static	Daphnia	31.1 mg/L
	OECD 201 Alga, Growth Inhibition Test	Acute ErC50 (growth rate)	72 hours Semi-static	Algae	20 mg/L
	-	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

12.2 Persistence and degradability

Product/ingredient name	Test	Period	Result
diethylenetriamine	-	28 days	<60 %
triethylenetetramine	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 %

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

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

ARALDITE 2014-1 C HARDENER				12/15
Date of printing	: 10 January 2012	MSDS no.	: 00070742	
Date of issue	: 10 January 2012	Version	: 1.03	

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. 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

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

	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards	14.6 Special precautions for user	Additional information
ADR/RID	-	-	No.	Not available.	-
IMDG	-	-	No.	Not available.	-
IATA	-	-	No.	Not available.	-

ARALDITE 2014-1 C HARDENER

13/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742
Date of issue : 10 January 2012 **Version** : 1.03

SECTION 14: Transport information

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)

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.

International regulations

Chemical Weapons Convention List Schedule I Chemicals : Not listed
Chemical Weapons Convention List Schedule II Chemicals : Not listed
Chemical Weapons Convention List Schedule III Chemicals : Not listed

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

ARALDITE 2014-1 C HARDENER

14/15

Date of printing : 10 January 2012 **MSDS no.** : 00070742
Date of issue : 10 January 2012 **Version** : 1.03

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 : 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.
 H330 Fatal 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. 4, H302 ACUTE TOXICITY: ORAL - Category 4
 Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - 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

Full text of abbreviated R phrases : R62- Possible risk of impaired fertility.
 R26- Very toxic by inhalation.
 R23- Toxic by inhalation.
 R21- Harmful in contact with skin.
 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.
 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

MSDS no. : 00070742
Date of printing : 1/10/2012.

Date of issue / Date of revision : 1/10/2012.

14/15

ARALDITE 2014-1 C HARDENER

15/15

Date of printing : 10 January 2012

MSDS no. : 00070742

Date of issue : 10 January 2012

Version : 1.03

SECTION 16: Other information

Date of issue/ Date of revision : 1/10/2012.

Date of previous issue : 10/28/2011.

Version : 1.03

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