

SAFETY DATA SHEET

ARALDITE LY 8615 US

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance or preparation

Product name : ARALDITE LY 8615 US
Product type : Liquid.
Product description : Preparation
Use of the substance/preparation : Resin for tooling systems

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2. HAZARDS IDENTIFICATION

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

Classification : Muta. Cat. 3; R68
 Xn; R22
 Xi; R36/38
 R43
 N; R51/53

Human health hazards : Possible risk of irreversible effects. Harmful if swallowed. 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 11 for more detailed information on health effects and symptoms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Preparation

Ingredient name	CAS number	%	Number	Classification
triglycidyl-p-aminophenol	5026-74-4	30 - 60		Muta. Cat. 3; [1] R68 Xn; R22 Xi; R38 R43 N; R51/53
bis[4-(2,3-epoxypropoxy)phenyl]propane	1675-54-3	30 - 60		Xi; R36/38 [1] R43
N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane	28768-32-3	13 - 30		Muta. Cat. 3; [1]

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3. COMPOSITION/INFORMATION ON INGREDIENTS

butanedioldiglycidyl ether	2425-79-8	3 - 7		R68 R43 N; R51/53 Xn; R20/21 [1] Xi; R36/38 R43 R52/53
See section 16 for the full text of the R-phrases declared above				

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

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] PBT-substance

[4] vPvB-substance

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

4. FIRST AID MEASURES

First-aid measures

Inhalation

: Move exposed person to fresh air. Keep person warm and at rest. 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 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.

Ingestion

: Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. 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. 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.

Skin contact

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

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.

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.

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.

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

5. FIRE-FIGHTING MEASURES

Extinguishing media

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

Not suitable : None known.

Special exposure hazards : In a fire or if heated, a pressure increase will occur and the container may burst. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Burning produces obnoxious and toxic fumes., Carbon oxides, Nitrogen oxides

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : 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 (see section 8).

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.

Methods for 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.

7. HANDLING AND STORAGE

Handling : Put on appropriate personal protective equipment (see section 8). 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. 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. Refer to special instructions/safety data sheet. 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.

Storage : Store between the following temperatures: 2 to 8°C (35.6 to 46.4°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.

7. HANDLING AND STORAGE

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

Packaging materials

Recommended : Use original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

<u>Ingredient name</u>	<u>Occupational exposure limits</u>
No exposure limit value known.	

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to 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.

Exposure controls

Occupational exposure 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.

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. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. 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.

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

(BTT = Break Through Time)

Ethyl Vinyl Alcohol Laminate (EVAL), butyl rubber

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

nitrile rubber

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.

Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin 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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance

- Physical state** : Liquid. [Paste.]
Colour : Brown.
Odour : Slight

Important health, safety and environmental information

- Boiling point** : >200°C (>392°F)
Flash point : Closed cup: >100°C (>212°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
Decomposition temperature : >200°C (>392°F)
Vapour pressure : <0.01 kPa (<0.075 mm Hg) 20 deg C
Density : 1.22 g/cm³ [25°C (77°F)]
Water solubility : almost insoluble

10. STABILITY AND REACTIVITY

- Chemical stability** : The product is stable.
Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid : Avoid release to the environment. Refer to special instructions/safety data sheet.
Materials to avoid : strong acids, strong bases, strong oxidising agents
Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
 Burning produces obnoxious and toxic fumes., Carbon oxides, Nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Toxicokinetics

- Absorption** : Not available.
Distribution : Not available.
Metabolism : Not available.
Elimination : Not available.

Potential acute health effects

- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion : Harmful if swallowed. Irritating to mouth, throat and stomach.
Skin contact : Irritating to skin. May cause sensitisation by skin contact.
Eye contact : Irritating to eyes.

Acute toxicity

- | Product/ingredient name | Result | Species | Dose | Exposure |
|-------------------------|-----------|---------|-------------|----------|
| ARALDITE LY 8615 US | LD50 Oral | Rat | <2000 mg/kg | - |
- Conclusion/Summary** : Not available.

Potential chronic health effects

Chronic toxicity

- Conclusion/Summary** : Not available.

Irritation/Corrosion

- Conclusion/Summary** : Not available.

Sensitiser

- | Product/ingredient name | Route of exposure | Species | Result |
|-------------------------|-------------------|------------|-------------|
| ARALDITE LY 8615 US | skin | Guinea pig | Sensitising |
- Conclusion/Summary** : Not available.

11. TOXICOLOGICAL INFORMATION**Carcinogenicity****Conclusion/Summary** : Not available.**Mutagenicity**

Product/ingredient name	Test	Experiment	Result
N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane	-	In vitro; Mammalian-Animal; Somatic; +/-	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	In vivo; Mammalian-Animal; Somatic	Positive
	-	In vitro; Mammalian-Animal; Somatic	Negative
	-	In vivo; Mammalian-Animal; Germ	Negative
	-	In vivo; Mammalian-Animal; Germ	Negative
	-	In vivo; Mammalian-Animal; Somatic	Negative
	-	In vivo; Mammalian-Animal; Somatic	Equivocal

Conclusion/Summary : Not available.**Teratogenicity****Conclusion/Summary** : Not available.**Reproductive toxicity****Conclusion/Summary** : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
triglycidyl-p-aminophenol N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane	- -	Muta. Cat. 3; R68 Muta. Cat. 3; R68	- -	- -

Chronic effects : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.**Carcinogenicity** : No known significant effects or critical hazards.**Mutagenicity** : May cause heritable genetic effects, based on animal data.**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.**Over-exposure signs/symptoms****Inhalation** : No specific data.**Ingestion** : No specific data.**Skin** : Adverse symptoms may include the following:
irritation
redness**Eyes** : Adverse symptoms may include the following:
irritation
watering
redness**12. ECOLOGICAL INFORMATION****Environmental effects** : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. May be harmful to the environment if released in large quantities.**Aquatic ecotoxicity**

Product/ingredient name	Test	Result	Species	Exposure
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12. ECOLOGICAL INFORMATION

N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane	DIN DIN 38412 Part 8	Acute IC50 >10000 mg/L Fresh water	Bacteria - Pseudomonas putida	24 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 7 mg/L Fresh water	Fish - Common carp (Cyprinus carpio)	96 hours Static

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

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

13. DISPOSAL CONSIDERATIONS

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. 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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

European waste catalogue (EWC) : The relevant EU Directives and local, regional and national regulations must be complied with. It is among the tasks of the end user to assign the waste to waste codes specific to industrial sectors and processes according to the European Waste catalogue. It is recommended that the details be agreed with the waste disposer responsible.

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07 02 08* other still bottoms and reaction residues

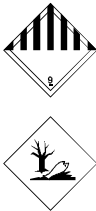
Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

14. TRANSPORT INFORMATION**International transport regulations****Proper shipping name**

ADR : Environmentally hazardous substance, liquid, n.o.s. EPOXY RESIN TRIGLYCIDYL-P-AMINOPHENOL





IMDG : Environmentally hazardous substance, liquid, n.o.s. (TRIGLYCIDYL-P-AMINOPHENOL) (EPOXY RESIN). Marine pollutant

IATA : Environmentally hazardous substance, liquid, n.o.s. (EPOXY RESIN) (TRIGLYCIDYL-P-AMINOPHENOL)

Regulatory information	UN number	Classes	Packing group	Label	Additional information
Land - road/railway ADR/RID Class	UN3082	9	III		Classification code M6 Hazard identification number 90
			III		Emergency schedules (EmS) F-A, S-F Marine pollutant

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14. TRANSPORT INFORMATION

Sea IMDG Class	UN3082	9		 	
Air IATA Class	UN3082	9	III	 	Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 914 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 914

15. REGULATORY INFORMATION

EU regulations

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Hazard symbol or symbols :



Xn, N Harmful, Dangerous for the environment

Risk phrases

: R68- Possible risk of irreversible effects.
R22- Harmful if swallowed.
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.

Safety phrases

: S36/37- Wear suitable protective clothing and gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Contains

: triglycidyl-p-aminophenol
bis-[4-(2,3-epoxypropoxy)phenyl]propane
N,N,N',N'-tetraglycidyl-4,4'-diaminodiphenylmethane
butanedioldiglycidyl ether

Exceptional labelling of special preparations

: Contains epoxy constituents. See information supplied by the manufacturer.

International regulations**International lists**

: **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): At least one component is not listed.
United States inventory (TSCA 8b): All components are listed or exempted.
Europe inventory: All components are listed or exempted.
Canada inventory: All components are listed or exempted.

16. OTHER INFORMATION

Full text of R-phrases referred to in sections 2 and 3 - United Kingdom (UK)	: R68- Possible risk of irreversible effects. R22- Harmful if swallowed. 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 referred to in sections 2 and 3 - United Kingdom (UK)	: Muta. Cat. 3 - Mutagen category 3 Xn - Harmful Xi - Irritant N - Dangerous for the environment

References

Epoxy Resins and Curing Agents; Toxicology, Health, Safety and Environmental Aspects (Plastics Europe, May 2006)

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.

Users of products supplied by Huntsman Advanced Materials should take appropriate measures to ensure working practices are in accordance with the Control of Substances Hazardous to Health Regulations (COSHH).

History

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✔ Indicates information that has changed from previously issued version.

Notice to reader

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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.

Enquiries should be addressed to your nearest Huntsman sales office or to:

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