

SAFETY DATA SHEET

ARALDITE 2012 RESIN(E)/HARZ

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

Identification of the substance or mixture

Product name : ARALDITE 2012 RESIN(E)/HARZ
Product type : Liquid.
Product description : Preparation
Use of the substance/mixture : Component for adhesive applications

Supplier : Huntsman Advanced Materials (Europe)BVBA
 Everslaan 45
 3078 Everberg / Belgium
 Tel.: +41 61 299 20 41
 Fax: +41 61 299 20 40

Emergency 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

For further Product EHS related questions concerning this document or its contents, please contact:

E-Mail:
global_product_ehs_admat@huntsman.com

2. HAZARDS IDENTIFICATION

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 11 for more detailed information on health effects and symptoms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Preparation

Ingredient name	CAS number	%	Number	Classification
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	25068-38-6	60 - 100		Xi; R36/38 [1] R43
butanedioldiglycidyl ether	2425-79-8	3 - 7		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.

Date of issue/Date of revision : 12/7/2010.

3. COMPOSITION/INFORMATION ON INGREDIENTS

[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

: 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. 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. 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.

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

: Carbon oxides, Burning produces obnoxious and toxic fumes.

5. FIRE-FIGHTING MEASURES

- 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.

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. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

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. Remove contaminated clothing and protective equipment before entering eating areas. 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. 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 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
- Packaging materials**
Recommended : Use original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

Ingredient name

Occupational exposure limits

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 : 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.

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.

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):
 neoprene, 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.
Colour : Yellowish.
Odour : Slight

Important health, safety and environmental information

- pH** : 6 [Conc. (% w/w): 50%] Water 20 deg C
Boiling point : >200°C (>392°F)
Flash point : Closed cup: >200°C (>392°F) [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
Decomposition temperature : >200°C (>392°F)
Vapour pressure : <0.0002 kPa (<0.0015 mm Hg) [20°C] 20 deg C
Density : 1.17 g/cm³ [25°C (77°F)]
Water solubility : practically insoluble
Viscosity : Dynamic: 25000 to 45000 mPa·s (25000 to 45000 cP) 25 deg C

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 : No specific data.
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.
 Carbon oxides, Burning produces obnoxious and toxic fumes.

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 : 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 2012 RESIN(E)/HARZ	LD50 Oral	Rat	>5000 mg/kg	-
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	>2000 mg/kg	-
	LC0 Inhalation Vapour	Rat - Male	0.00001 ppm	5 hours
butanedioldiglycidyl ether	LD50 Dermal	Rat - Male, Female	>2150 mg/kg	-
	LD50 Oral	Rat - Male, Female	1163 mg/kg	-

- Conclusion/Summary** : Not available.

11. TOXICOLOGICAL INFORMATION

Potential chronic health effects

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	Sub-chronic NOAEL Oral	Rat - Male, Female	50 mg/kg	14 weeks; 7 days per week
	Sub-chronic NOEL : Dermal	Rat - Male, Female	10 mg/kg	13 weeks; 5 days per week
	Sub-chronic NOAEL Dermal	Mouse - Male	100 mg/kg	13 weeks; 3 days per week
butanedioldiglycidyl ether	Sub-chronic NOAEL Oral	Rat - Male, Female	200 mg/kg	28 days; 7 days per week

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Product/ingredient name	Route of exposure	Species	Result
ARALDITE 2012 RESIN(E)/HARZ reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	skin skin	Guinea pig Mouse	Sensitising Sensitising
butanedioldiglycidyl ether	skin	Guinea pig	Sensitising

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative - Oral - NOAEL	Rat - Male, Female	15 mg/kg	2 years; 7 days per week
	Negative - Dermal - NOEL :	Rat - Female	1 mg/kg	2 years; 5 days per week
	Negative - Dermal - NOEL :	Mouse - Male	0.1 mg/kg	2 years; 3 days per week

Conclusion/Summary : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	-	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	-	Experiment: In vitro Subject: Mammalian- Animal Cell: Somatic Metabolic activation: +/-	Positive
	-	Experiment: In vivo Subject: Mammalian- Animal Cell: Germ	Negative
	-	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative
butanedioldiglycidyl ether	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian- Animal Metabolic activation: +/-	Positive

11. TOXICOLOGICAL INFORMATION

OECD 474 Mammalian Erythrocyte Micronucleus Test Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic Negative

Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative - Oral	Rat - Female	>540 mg/kg NOEL :	10 days
	Negative - Dermal	Rabbit - Female	>300 mg/kg NOEL :	13 days; 6 hours per day
	Negative - Oral	Rabbit - Female	180 mg/kg NOAEL	13 days

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	-	-	-	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week

Conclusion/Summary : Not available.

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 : 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.

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
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	-	Acute EC50 9.4 mg/L Fresh water	Algae	72 hours Static
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 1.7 mg/L Fresh water	Daphnia	48 hours Static
	-	Acute IC50 >100 mg/L Fresh water	Bacteria	3 hours Static
	OECD 203 Fish,	Acute LC50 1.5	Fish	96 hours Static

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12. ECOLOGICAL INFORMATION

butanedioldiglycidyl ether	Acute Toxicity Test	mg/L Fresh water		
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC 0.3 mg/L Fresh water	Daphnia	21 days Semi-static
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 75 mg/L Fresh water	Daphnia	24 hours Static
	OECD 201 Alga, Growth Inhibition Test	Acute EL50 >160 mg/L Fresh water	Algae - <i>Selenastrum capricornutum</i> (<i>Pseudokirchneriella subcapitata</i>)	72 hours Static
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute IC50 >100 mg/L Fresh water	Bacteria	3 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 24 mg/L Fresh water	Fish	96 hours Static

Conclusion/Summary : Not available.

Other ecological information**Biodegradability****Product/ingredient name**

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)

Test

OECD Derived from OECD 301F (Biodegradation Test)

Result

5 % - Not readily - 28 days

Dose

20 mg/L Oxygen consumption

Inoculum

-

butanedioldiglycidyl ether

OECD 301F Ready Biodegradability - Manometric Respirometry Test

43 % - Not readily - 28 days

20 mg/L Oxygen consumption

Activated sludge

Conclusion/Summary : Not available.

Product/ingredient name

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)
butanedioldiglycidyl ether

Aquatic half-life

Fresh water 4.83 days
Fresh water 3.58 days
Fresh water 7.1 days
-

Photolysis

-

Biodegradability

Not readily

Not readily

Bioaccumulative potential**Product/ingredient name**

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)

LogP_{ow}

3.242

BCF

31

Potential

low

butanedioldiglycidyl ether

-0.269

-

low

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

13. DISPOSAL CONSIDERATIONS

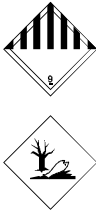
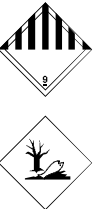
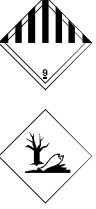
- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. 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.
- 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.
- 07 02 08*
- 07 02 08* other still bottoms and reaction residues
- Hazardous waste** : Yes.

14. TRANSPORT INFORMATION

International transport regulations

Proper shipping name

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

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
Sea IMDG Class	UN3082	9	III		Emergency schedules (EmS) F-A, S-F
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

Date of issue/Date of revision : 12/7/2010.

14. TRANSPORT INFORMATION**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 :



Xi, N Irritant, Dangerous for the environment

Risk phrases

: 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

: S24- Avoid contact with skin.
S37- Wear suitable gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Contains

: reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)
butanedioldiglycidyl ether

Exceptional labelling of special preparations

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

International regulations**International lists****Europe inventory**

: All components are listed or exempted.

United States inventory (TSCA 8b)

: All components are listed or exempted.

Canada inventory

: All components are listed or exempted.

Australia inventory (AICS)

: All components are listed or exempted.

China inventory (IECSC)

: All components are listed or exempted.

Japan inventory (ENCS)

: All components are listed or exempted.

Korea inventory (KECI)

: All components are listed or exempted.

Philippines inventory (PICCS)

: All components are listed or exempted.

16. OTHER INFORMATION**Full text of R-phrases referred to in sections 2 and 3 - United Kingdom (UK)**

: R20/21- Harmful by inhalation and in contact with 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)

: 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

Date of issue/Date of revision : 12/7/2010.

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16. OTHER INFORMATION

Date of printing : 12/9/2010.
Date of issue/ Date of revision : 12/7/2010.
Date of previous issue : No previous validation.
Version : 1

✔ Indicates information that has changed from previously issued version.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

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:

Huntsman Belgium (BVBA)
Everslaan 45
B-3078 Everberg
Belgium
Tel.:+32-(0)2-758-9211

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

HUNTSMAN

Enriching lives through innovation

ARALDITE®2012 HARDENER

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	31.08.2015	400001009176	Date of first issue: 31.08.2015

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

1.1 Product identifier

Trade name : ARALDITE®2012 HARDENER

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

Use of the Substance/Mixture : Adhesives

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA
Address : Everslaan 45
3078 Everberg
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

E-mail address to request full REACH registration number upon EU member State Authority request :
REACH_Registration_Nr_AM@huntsman.com

1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Chronic aquatic toxicity, Category 3	H412: Harmful to aquatic life with long lasting effects.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P280 Wear protective gloves.
P280 Wear eye protection/ face protection.
P273 Avoid release to the environment.
Response:
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P362 + P364 Take off contaminated clothing and wash it before reuse.
Disposal:
P501 Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous components which must be listed on the label:

Dimethyldipropyltriamine

N,N-4-trimethylpiperazine-1-ethylamine

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

No information available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
2,2'-[1,2-Ethanediy]bis(oxy)]bis(ethanethiol)	14970-87-7 239-044-2 05-2117325455-46-0000	Acute Tox. 4; H332, H302 Aquatic Chronic 2;	>= 2.5 - < 10

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		H411	
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4 -	Acute Tox. 4; H302 Skin Corr. 1A; H314 Skin Sens. 1B; H317	>= 1 - < 5
2,4,6-Tris(dimethylaminomethyl)phenol	90-72-2 202-013-9 01-2119560597-27	Acute Tox. 4; H302 Skin Corr. 1C; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412 Skin Sens. 1B; H317	>= 1 - < 5
N,N,4-trimethylpiperazine-1-ethylamine	104-19-8 203-183-7 05-2117324997-29-0000	Skin Corr. 1B; H314 Aquatic Chronic 3; H412 Skin Sens. 1; H317 Acute Tox. 4; H302 Eye Dam. 1; H318 Acute Tox. 3; H311	>= 1 - < 5
N-butyl acetate	123-86-4 204-658-1 05-2117325185-49-0000	Flam. Liq. 3; H226 STOT SE 3; H336	1 - 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
- If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.
If symptoms persist, call a physician.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

None known.

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4.3 Indication of any immediate medical attention and special treatment needed

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : No data is available on the product itself.

5.2 Special hazards arising from the substance or mixture

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Specific extinguishing methods : No data is available on the product itself.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment. Ensure adequate ventilation.

6.2 Environmental precautions

Environmental precautions : Try to prevent the material from entering drains or water courses. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

None

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid contact with skin and eyes. For personal protection see section 8.

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Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations.

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place.
- Advice on common storage : Strong acids
Strong bases
Strong oxidizing agents
- Other data : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
N-butyl acetate	123-86-4	TWA	150 ppm 724 mg/m ³	GB EH40
		STEL	200 ppm 966 mg/m ³	GB EH40

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

- Dimethyldipropyltriamine : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Systemic effects
Value: 3.7 mg/m³
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Systemic effects
Value: 7.5 mg/m³
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Local effects
Value: 3.7 mg/m³

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End Use: Workers
Exposure routes: Inhalation
Potential health effects: Local effects
Value: 7.5 mg/m³
End Use: Workers
Exposure routes: Dermal
Potential health effects: Systemic effects

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Systemic effects
Value: 0.65 mg/m³
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Local effects
Value: 0.65 mg/m³
End Use: Consumers
Exposure routes: Oral
Potential health effects: Systemic effects

2,4,6-tris(dimethylaminomethyl)phenol : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Systemic effects
Value: 0.31 mg/m³

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Dimethyldipropyltriamine : Fresh water
Value: 9.2 µg/lAssessment Factors

Marine water
Value: 0.92 µg/lAssessment Factors

Freshwater - intermittent
Value: 92 µg/lAssessment Factors

Sewage treatment plant
Value: 18.1 mg/lAssessment Factors

Fresh water sediment
Value: 0.0336 mg/kgEquilibrium method

Marine sediment
Value: 0.00336 mg/kgEquilibrium method

Soil
Value: 0.00132 mg/kgEquilibrium method

2,4,6-tris(dimethylaminomethyl)phenol : Fresh water
Value: 0.084 mg/lAssessment Factors

Marine water
Value: 0.0084 mg/lAssessment Factors

Freshwater - intermittent
Value: 0.84 mg/lAssessment Factors

Sewage treatment plant

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Value: 0.2 mg/lAssessment Factors

8.2 Exposure controls

Personal protective equipment

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

Hand protection

Material : butyl-rubber
Break through time : > 8 h
Solvent-resistant gloves (butyl-rubber)
Nitrile rubber
10 - 480 min
Neoprene gloves

Remarks : Polyvinyl alcohol or nitrile- butyl-rubber gloves The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Before removing gloves clean them with soap and water.

Skin and body protection : impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid

Colour : light yellow

Odour : unpleasant

Boiling point : > 200 °C

Flash point : > 100 °C
Method: Pensky-Martens closed cup, closed cup

Vapour pressure : < 0.01 hPa (20 °C)

Density : 1.165 g/cm³ (25 °C)

Solubility(ies)
Water solubility : practically insoluble (20 °C)

Decomposition temperature : > 200 °C

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Viscosity
Viscosity, dynamic : 20,000 - 40,000 mPa.s (25 °C)

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.
No decomposition if used as directed.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

10.6 Hazardous decomposition products

Carbon oxides
Burning produces noxious and toxic fumes.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity - Product : LD50 (Rat, male and female): 2,631 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : No data available

Acute dermal toxicity - Product : LD50 (Rat, male and female): > 4,000 mg/kg
Method: OECD Test Guideline 402

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation

Product:

Species: Rabbit
Assessment: Mild skin irritant
Method: OECD Test Guideline 404

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Result: No skin irritation

Serious eye damage/eye irritation

Product:

Species: Rabbit
Assessment: Mild eye irritant
Method: OPPTS 870.2400
Result: Irritating to eyes.

Respiratory or skin sensitisation

Components:

Dimethyldipropyltriamine:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Causes sensitisation.

2,4,6-tris(dimethylaminomethyl)phenol:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

N-butyl acetate:
Exposure routes: Skin
Species: Guinea pig
Result: Does not cause skin sensitisation.

Assessment: No data available

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : No data available

Carcinogenicity

Components:

Dimethyldipropyltriamine:
Species: Mouse, (male)
Application Route: Dermal
Exposure time: 20 month(s)
Frequency of Treatment: 3 daily
Result: negative

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Carcinogenicity - Assessment : No data available

Reproductive toxicity

Components:

Dimethyldipropyltriamine:
Effects on fertility : Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422

2,4,6-tris(dimethylaminomethyl)phenol:
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422

Components:

Dimethyldipropyltriamine:
Effects on foetal development : Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 15 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 15 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic development were detected.
GLP: yes

Components:

Dimethyldipropyltriamine:
Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure

Components:

2,4,6-tris(dimethylaminomethyl)phenol:
Target Organs: Brain
Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Dimethyldipropyltriamine:
Species: Rat, male and female
NOEC: 550
Application Route: Ingestion

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Test atmosphere: vapour
Exposure time: 3 Weeks Number of exposures: 7 d
Method: Subchronic toxicity

Species: Mouse, male
No observed adverse effect level: ≥ 56.3
Application Route: Skin contact
Exposure time: 20 h Number of exposures: 3 d
Method: Chronic toxicity

2,4,6-tris(dimethylaminomethyl)phenol:
Species: Rat, male and female
No-observed-effect level: 15 mg/kg
Application Route: Ingestion
Exposure time: 1,032 h Number of exposures: 7 d
Method: Subacute toxicity

Repeated dose toxicity - Assessment : No data available

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

Remarks: No data available

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SECTION 12: Ecological information

12.1 Toxicity

Components:

Dimethyldipropyltriamine:

- Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9.2 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202
- Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201
- Toxicity to bacteria : EC50 (Pseudomonas putida): 181 mg/l
Exposure time: 16 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

2,4,6-tris(dimethylaminomethyl)phenol:

- Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 175 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
- Toxicity to daphnia and other aquatic invertebrates : LC50 : 718 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Marine water
- Toxicity to algae : ErC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 84 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

N-butyl acetate:

- Toxicity to fish : EC50 (Menidia beryllina (Silverside)): 185 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 : 205 mg/l
Exposure time: 24 h

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Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 674.7 mg/l
Exposure time: 72 h

Toxicity to bacteria : IC0 : 1,200 mg/l
Exposure time: 24 h

12.2 Persistence and degradability

Components:

Dimethyldipropyltriamine:

Biodegradability : Result: Readily biodegradable
Biodegradation: 100 %
Exposure time: 28 d
Method: ISO

2,4,6-tris(dimethylaminomethyl)phenol:

Biodegradability : Inoculum: activated sludge
Concentration: 2 mg/l
Result: Not readily biodegradable.
Biodegradation: 4 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

N-butyl acetate:

Biodegradability : Result: Readily biodegradable
Biodegradation: 98 %
Exposure time: 28 d

12.3 Bioaccumulative potential

Components:

Dimethyldipropyltriamine:

Partition coefficient: n-octanol/water : log Pow: 0.5

log Pow: -0.56 (25 °C)
pH: 11.6
Method: OECD Test Guideline 107

2,4,6-tris(dimethylaminomethyl)phenol:

Partition coefficient: n-octanol/water : log Pow: 0.219 (21.5 °C)
Method: OPPTS 830.7550

N-butyl acetate:

Bioaccumulation : Bioconcentration factor (BCF): 4 - 14

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or

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very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

Product:

Additional ecological information

: Remarks: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

IATA

Not regulated as a dangerous good

IMDG

Not regulated as a dangerous good

ADR

Not regulated as a dangerous good

RID

Not regulated as a dangerous good

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : Not applicable

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Seveso II - Directive 2003/105/EC amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

Not applicable

Volatile organic compounds : Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Volatile organic compounds (VOC) content: 2.67 %, 31.07 g/l
Remarks: VOC content excluding water

Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Volatile organic compounds (VOC) content: 2.67 %, 31.07 g/l
Remarks: VOC content valid only for coating materials used on wood surfaces

The components of this product are reported in the following inventories:

CH INV : The formulation contains substances listed on the Swiss Inventory

TSCA : On TSCA Inventory

DSL : This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL.

AICS : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : Low volume exemption

ISHL : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

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15.2 Chemical Safety Assessment

SECTION 16: Other information

Full text of H-Statements

H226	: Flammable liquid and vapour.
H302	: Harmful if swallowed.
H311	: Toxic in contact with skin.
H314	: Causes severe skin burns and eye damage.
H317	: May cause an allergic skin reaction.
H318	: Causes serious eye damage.
H332	: Harmful if inhaled.
H336	: May cause drowsiness or dizziness.
H411	: Toxic to aquatic life with long lasting effects.
H412	: Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Chronic	: Chronic aquatic toxicity
Eye Dam.	: Serious eye damage
Flam. Liq.	: Flammable liquids
Skin Corr.	: Skin corrosion
Skin Sens.	: Skin sensitisation
STOT SE	: Specific target organ toxicity - single exposure

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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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