

Material Safety Data Sheet

1 . Identification of the material and supplier

Product name : ARALDITE® KIT K 340-1 CI

ARALDITE® is a registered trademark of Huntsman Corporation or an affiliate thereof in one or more countries, but not all countries.

Other names : Not available.

Proper shipping name : Amines, liquid, corrosive, n.o.s. (isophorone diamine)

Recommended use : Epoxy adhesive

Supplier name and address : Huntsman Advanced Materials (Australia) Pty Ltd
ACN:09162879
Gate 3, 765 Ballarat Road
Deer Park Victoria 3023
Australia

Telephone : +613 9933 6691 (Customer Service: Huntsman Advanced Materials)
1300 366 819 (Toll-free - Australia only)
0800 441 216 (Toll-free- New Zealand only)

e-mail address for MSDS information : Global_Product_EHS_AdMat@huntsman.com

Emergency telephone number : **Australia: 1800 786 152 (ALL HOURS)**
International: +65 6336 6011 (ALL HOURS)

2 . Hazards identification

Hazard classification : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

This material is classified as hazardous according to Australian criteria.

Classified as Dangerous Goods for the purpose of transport by road, rail, sea or air. Refer to relevant regulations for storage and transport requirements.

Class : Class 8: Corrosive material

Risk phrase(s) : R20- Harmful by inhalation.
R41- Risk of serious damage to eyes.
R38- Irritating to 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 phrase(s) : S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Poison schedule (Australia) : S5

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3. Composition/information on ingredients

Physical state : Solid.

Colour / Appearance

Ingredient name	CAS number	Concentration (%)
quartz (SiO ₂)	14808-60-7	10 - <30
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	25068-38-6	10 - <30
trimethylhexamethylenediamine	25620-58-0	< 10
butanedioldiglycidyl ether	2425-79-8	< 10
bisphenol F-epoxy resin	9003-36-5	< 10
isophorone diamine	2855-13-2	< 10
4,4'-isopropylidenediphenol	80-05-7	< 10
benzyl alcohol	100-51-6	< 10
2,4,6-tris(dimethylaminomethyl)phenol	90-72-2	< 10
diethylenetriamine	111-40-0	< 10
N-(3-(trimethoxysilyl)propyl)ethylenediamine	1760-24-3	< 10
Other ingredients determined not to be hazardous	-	to 100

4. First-aid measures

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.

Eye contact

Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, 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.

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.

Inhalation

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. 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.

Medical Attention and Special Treatment

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.

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 1126; New Zealand 0800 764 766.

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4 . First-aid measures

5 . Fire-fighting measures

Extinguishing media

Use dry chemical, CO₂, water spray (fog) or foam.

Hazardous combustion products

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/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.

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. 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.

No specific fire or explosion hazard.

Hazchem code : 2X

6 . Accidental release measures

Emergency procedures

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. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

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 and materials for containment and clean-up procedures

Large spill

Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill

Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

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7. Handling and storage

Precautions for safe 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 release to the environment. Refer to special instructions/safety data sheet. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Precautions for safe storage

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.

This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

8. Exposure controls/personal protection

National exposure standards

Ingredient name

quartz (SiO₂)

Exposure limits

Safe Work Australia (Australia, 8/2005).

TWA: 0.1 mg/m³ 8 hour(s).

Limestone

Safe Work Australia (Australia, 8/2005).

TWA: 10 mg/m³ 8 hour(s).

barium sulphate, natural

Safe Work Australia (Australia, 8/2005).

TWA: 10 mg/m³ 8 hour(s).

Cellulose

Safe Work Australia (Australia, 8/2005).

TWA: 10 mg/m³ 8 hour(s).

titanium dioxide

Safe Work Australia (Australia, 8/2005).

TWA: 10 mg/m³ 8 hour(s).

diethylenetriamine

Safe Work Australia (Australia, 8/2005). Absorbed through skin.

TWA: 4.2 mg/m³ 8 hour(s).

TWA: 1 ppm 8 hour(s).

Notes:

Exposure standard (TWA): the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit): the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour work day.

Peak Limitation Notice: a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.

Skin Absorption Notice: absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

Sensitiser Notice: the substance can cause a specific immune response in some people. An affected individual may subsequently react to exposure to minute levels of that substance.

The Exposure Standards listed represent airborne concentrations of individual chemical substances which, according to current knowledge, should neither impair the health of, nor cause undue discomfort to, nearly all workers. They are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

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8 . Exposure controls/personal protection

Biological limit values

No biological limit allocated.

Engineering controls

Use only with adequate ventilation. 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.

Personal protective equipment

Eyes

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.

Refer to Australian/New Zealand Standard AS/NZS 1337:1992 for guidance on selection and use of protective eyewear.

Hands

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.

Refer to Australian/New Zealand Standard AS/NZS 2161.1: 2000 for guidance on selection and use of protective gloves.

Respiratory

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.

Refer to Australian/New Zealand Standard AS/NZS 1715 and AS/NZS 1716 for guidance on selection and use of respiratory devices.

Skin

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.

9 . Physical and chemical properties

Physical state : Solid.
Colour / Appearance : Not available.
Solubility : Not available.

Density	: 1.6 to 1.8 g/cm ³ [25°C]	Vapour density	: Not available.
Specific gravity	: Not available.	Vapour pressure	: Not available.
Boiling point	: Not available.	Flash point	: Not available.
Melting point	: Not available.	Flammable limits	: Not available.
Viscosity	: Not available.	Auto-ignition temperature	: Not available.
pH	: Not available.		

(Typical values only - consult specification sheet)

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10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : No specific data.
- Materials to avoid** : Refer to SDS for individual components of the pack.
- Hazardous decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides
- Hazardous Reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

11 . Toxicological information

Potential acute health effects

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

Acute toxicity

Product/ingredient name	Exposure	Species	Dose	Result
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
Limestone butanedioldiglycidyl ether	LD50 Oral	Rat	>2000 mg/kg	-
	LD50 Dermal	Rat - Male, Female	>2150 mg/kg	-
bisphenol F-epoxy resin	LD50 Oral	Rat - Male, Female	1163 mg/kg	-
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
barium sulphate, natural	LD50 Oral	Rat - Male	>5000 mg/kg	-
	LD50 Oral	Rat	307 to 364 g/kg	-
isophorone diamine	LD50 Oral	Rat	1030 mg/kg	-
	LD50 Dermal	Rabbit	>2000 mg/kg	-
4,4'-isopropylidenediphenol	LD50 Oral	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	1620 mg/kg	-
benzyl alcohol	LD50 Oral	Rat	2169 mg/kg	-
	LD50 Oral	Rat - Male, Female	2169 mg/kg	-
diethylenetriamine	LD50 Dermal	Rabbit	1090 mg/kg	-
	LD50 Oral	Rat	1500 to 2000 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.07 to 0.3 mg/L	4 hours

Potential chronic health effects

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
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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
trimethylhexamethylenediamine	Sub-chronic NOAEL Oral	Rat - Male, Female	10 mg/kg	13 weeks
butanedioldiglycidyl ether	Sub-chronic NOAEL Oral	Rat - Male, Female	200 mg/kg	28 days; 7 days per week
bisphenol F-epoxy resin	Sub-chronic NOAEL Oral	Rat - Male, Female	250 mg/kg	13 weeks; 7 days per week
barium sulphate, natural	Sub-chronic NOAEL Oral	Rat	>104 mg/kg	90 days
	Sub-acute LOEC Inhalation Dusts and mists	Rat	40 mg/m3	5 hours; 5 days per week
4,4'-isopropylidenediphenol	Sub-chronic NOAEL Oral	Dog - Male, Female	75 mg/kg	90 days; 7 days per week
	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	10 mg/m3	13 weeks; 6 hours per day
2,4,6-tris(dimethylaminomethyl)phenol	Sub-acute NOEL : Oral	Rat - Male, Female	15 mg/kg	43 days; 7 days per week
diethylenetriamine	Sub-chronic NOEL : Oral	Rat - Male, Female	70 to 80 mg/kg/d	13 weeks; 7 days per week
	Chronic NOAEL Dermal	Rat - Male, Female	114 mg/kg/d	400 days
	Sub-acute NOEC Inhalation Vapour	Rat - Male, Female	550 mg/m3	15 days

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
barium sulphate, natural	Negative - Oral - NOAEL	Mouse - Male, Female	160 to 200 mg/kg	0 weeks
	Negative - Oral - NOAEL	Rat - Male, Female	60 to 75 mg/kg	104 weeks
4,4'-isopropylidenediphenol	Negative - Oral - NOAEL	Rat - Male, Female	-	103 weeks; 7 days per week
diethylenetriamine	Negative - Dermal - NOEL :	Mouse - Male	56.3 mg/kg	3 days per week

Mutagenicity

Product/ingredient name	Test	Experiment	Result
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11 . Toxicological information

reaction product: bisphenol A- (epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian- Animal Cell: Somatic Metabolic activation: +/-	Positive
	OECD 478 Genetic Toxicology: Rodent Dominant Lethal Test	Experiment: In vivo Subject: Mammalian- Animal Cell: Germ	Negative
	EPA OPPTS	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative
trimethylhexamethylenediamine	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian- Animal	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
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative
bisphenol F-epoxy resin	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Positive
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian- Animal Cell: Somatic Metabolic activation: +/-	Positive
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian- Human Cell: Somatic Metabolic activation: +/-	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative
	OECD 486 Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo	Experiment: In vivo Subject: Mammalian- Animal Cell: Somatic	Negative

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barium sulphate, natural	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
4,4'-isopropylidenediphenol	-	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative
diethylenetriamine	-	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	-	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
	-	Experiment: In vivo Subject: Insect Cell: Germ	Negative
	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
	-		

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
trimethylhexamethylenediamine	Negative - Oral	Rabbit - Female	>250000 ppm NOAEL	13 days; 7 days per week
bisphenol F-epoxy resin	Negative - Dermal	Rabbit - Female	>300 mg/kg NOEL :	13 days; 6 hours per day
4,4'-isopropylidenediphenol	Negative - Oral	Rat - Female	640 mg/kg NOAEL	-

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure

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11 . Toxicological information

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Negative	Negative	Negative	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week
trimethylhexamethylenediamine	-	-	-	Rat - Male, Female	Oral: 10 mg/kg NOAEL	2 years; 7 days per week
bisphenol F-epoxy resin	Negative	Negative	Negative	Rat - Male, Female	Oral: 540 mg/kg NOEL :	238 days; 7 days per week
4,4'-isopropylidenediphenol	-	-	-	Rat - Male, Female	Oral: 5 mg/kg NOAEL	7 days per week
2,4,6-tris(dimethylaminomethyl)phenol	-	-	-	Rat - Male, Female	Oral: NOAEL	43 days; 7 days per week

- 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:
pain or irritation
watering
redness

Target organs : Contains material which causes damage to the following organs: lungs.
Contains material which may cause damage to the following organs: central nervous system (CNS).

12 . Ecological information

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

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
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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 Toxicity Test	Acute LC50 1.5 mg/L Fresh water	Fish	96 hours Static
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC 0.3 mg/L Fresh water	Daphnia	21 days Semi-static
Limestone	-	Acute EC50 >1000 mg/L	Daphnia - Daphnia sp.	48 hours
	-	Acute EC50 >200 mg/L	Algae - Algae general	72 hours
	-	Acute LC50 >10000 mg/L	Fish - Fish general (Pisces)	96 hours
trimethylhexamethylenediamine	DIN	Acute EgC50 29.5 mg/L	Algae	72 hours
	DIN	Acute IC50 89 mg/L	Bacteria	17 hours
butanedioldiglycidyl ether	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
bisphenol F-epoxy resin	OECD 201 Alga, Growth Inhibition Test	Acute EC50 1.8 mg/L Fresh water	Algae	72 hours Static
	OECD OECD 202: Part I (<i>Daphnia</i> sp., Acute Immobilisation test)	Acute EC50 1.6 mg/L Fresh water	Daphnia	48 hours Static
	-	Acute IC50 >100 mg/L Fresh water	Bacteria	3 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 0.55 mg/L Fresh water	Fish	96 hours Semi-static
	OECD 211	Chronic NOEC	Daphnia	21 days Semi-

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	Daphnia Magna Reproduction Test	0.3 mg/L Fresh water		static
barium sulphate, natural	OECD 201 Alga, Growth Inhibition Test	Acute EC50 >100 mg/L Fresh water	Algae	72 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 174 mg/L Fresh water	Fish	96 hours Static
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute LC50 14.5 mg/L Fresh water	Daphnia	48 hours Static
	OECD 211 Daphnia Magna Reproduction Test	Chronic NOEC 5.8 mg/L Fresh water	Daphnia	21 days Semi-static
isophorone diamine	Measured	Acute EC10 1120 mg/L	Bacteria - <i>Pseudomonas putida</i>	18 hours
	Not known	Acute EC50 37 mg/L	Algae - <i>Scenedesmus subspicatus</i>	72 hours
	202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 23 mg/L	Daphnia - <i>Daphnia magna</i> Straus 1820	48 hours
	203 Fish, Acute Toxicity Test	Acute LC0 70 mg/L	Fish - Zebra fish (<i>Brachydanio rerio</i>)	96 hours
	203 Fish, Acute Toxicity Test	Acute LC50 110 mg/L	Fish - Zebra fish (<i>Brachydanio rerio</i>)	96 hours
4,4'-isopropylidenediphenol	-	Acute EC50 3.9 to 10.2 mg/L	Daphnia	48 hours
	-	Acute EC50 2.5 to 3.1 mg/L	Algae - Green algae	96 hours
	-	Acute LC50 7.5 mg/L	Fish - Rainbow trout (<i>Oncorhynchus mykiss</i> , <i>Salmo gairdneri</i>)	96 hours
benzyl alcohol	-	Acute EC50 640 mg/L	Algae - <i>Scenedesmus subspicatus</i>	96 hours
	203 Fish, Acute Toxicity Test	Acute LC50 646 mg/L	Fish - Golden orfe (<i>Leuciscus idus</i>)	48 hours
	-	Acute LC50 460 mg/L	Fish - Fathead minnow (<i>Pimephales promelas</i>)	96 hours
2,4,6-tris(dimethylaminomethyl)phenol	OECD 201 Alga, Growth Inhibition Test	Acute EC50 84 mg/L Fresh water	Algae	72 hours Static
	-	Acute LC50 718 mg/L Marine water	Daphnia	96 hours Static

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	-	Acute LC50 175 mg/L Fresh water	Fish	96 hours Static
diethylenetriamine	-	Acute EC50 17 mg/L	Daphnia	48 hours
	-	Acute LC50 332 mg/L	Fish	96 hours
	-	Chronic NOEC 5.6 mg/L Fresh water	Daphnia	21 days Semi-static

Conclusion/Summary : Not available.

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	OECD Derived from OECD 301F (Biodegradation Test)	5 % - Not readily - 28 days	20 mg/L Oxygen consumption	-
trimethylhexamethylenediamine	EU	7 % - Not readily - 28 days	11.4 mg/L DOC	Activated sludge
butanedioldiglycidyl ether	OECD 301F Ready Biodegradability - Manometric Respirometry Test	43 % - Not readily - 28 days	20 mg/L Oxygen consumption	Activated sludge
bisphenol F-epoxy resin	EU	0 % - Not readily - 28 days	3 mg/L Oxygen consumption	Activated sludge
4,4'-isopropylidenediphenol	-	1 to 2 % - Not readily - 28 days	-	-
2,4,6-tris(dimethylaminomethyl)phenol	OECD 301D Ready Biodegradability - Closed Bottle Test	4 % - Not readily - 28 days	2 mg/L	Activated sludge
diethylenetriamine	-	<60 % - Not readily - 28 days	-	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	Fresh water 4.83 days Fresh water 3.58 days Fresh water 7.1 days	-	Not readily
trimethylhexamethylenediamine	-	-	Not readily
butanedioldiglycidyl ether	-	-	Not readily
bisphenol F-epoxy resin	-	-	Not readily
4,4'-isopropylidenediphenol	-	-	Not readily
2,4,6-tris(dimethylaminomethyl)phenol	-	-	Not readily
diethylenetriamine	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
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12 . Ecological information

reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700)	3.242	31	low
trimethylhexamethylenediamine	0.77	-	low
butanedioldiglycidyl ether	-0.269	-	low
bisphenol F-epoxy resin	2.7 to 3.6	-	high
isophorone diamine	0.99	-	low
benzyl alcohol	1.1	-	low
2,4,6-tris(dimethylaminomethyl)phenol	0.219	-	low
diethylenetriamine	-1.3	-	low

Mobility : 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. 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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Road and rail transport



Classified as dangerous goods by the criteria of the Australian Dangerous Goods (ADG) Code for transport by road and rail.

Marine transport

Classified as dangerous goods by the criteria of the International Maritime Dangerous Goods (IMDG) Code for transport by sea.





Air transport

Classified as dangerous goods by the criteria of the International Air Transport Association (IATA) Code for transport by air.

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN2735	Amines, liquid, corrosive, n.o.s. (isophorone diamine)	8	III	 	Hazchem code 2X

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14 . Transport information

IMDG	UN2735	Amines, liquid, corrosive, n.o.s. (TRIMETHYLHEXAMETHYLENEDIAMINES) (ISOPHORONE DIAMINE) (2,4,6-tris(dimethylaminomethyl)phenol). Marine pollutant (Reaction product: bisphenol A-(epichlorhydrin); epoxy resin (number average molecular weight < 700), bisphenol F-epoxy resin)	8	III	 	Emergency schedules (EmS) F-A, S-B
IATA	UN2735	Amines, liquid, corrosive, n.o.s. (TRIMETHYLHEXAMETHYLENEDIAMINES) (ISOPHORONE DIAMINE) (2,4,6-TRIS(DIMETHYLAMINOMETHYL)PHENOL) (2,4,6-tris(dimethylaminomethyl)phenol)	8	III	 	Passenger and Cargo Aircraft Quantity limitation: 5 L Packaging instructions: 852 Cargo Aircraft Only Quantity limitation: 60 L Packaging instructions: 856

PG* : Packing group

15 . Regulatory information

Inventory status

Country	Inventory	Status
Australia	AICS	All components are listed or exempted.
Canada	DSL	All components are listed or exempted.
China	IECSC	All components are listed or exempted.
Europe	EINECS/ELINCS/NLP	All components are listed or exempted.
Japan	ENCS	Not determined.
Korea	KECI	At least one component is not listed.
New Zealand	NZIoC	Not determined.
Philippines	PICCS	At least one component is not listed.
United States	TSCA	All components are listed or exempted.

Carcinogen schedule (Australia) : None Allocated.

Poison schedule (Australia) : S5

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16 . Other information

✔ Indicates information that has changed from previously issued version.

Disclaimer

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.

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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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