

Material Safety Data Sheet



1. Identification of the material and supplier

- Product name** : ARALDITE® F
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** : Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN)
- Recommended use** : Component used for the manufacture of electrical insulation parts
- 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.

- Risk phrase(s)** : 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 phrase(s)** : S24- Avoid contact with skin.
S37- Wear suitable gloves.
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 : Liquid.
Colour / Appearance : Yellow.

Ingredient name	CAS number	Concentration (%)
Bisphenol A epoxy resin	25068-38-6	>60
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

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. Get medical attention.

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 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.

Medical Attention and Special Treatment

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

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

5. Fire-fighting measures

Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

Hazardous combustion products

No specific data.

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.

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5. Fire-fighting measures

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.

In a fire or if heated, a pressure increase will occur and the container may burst.

Hazchem code : •3Z

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. Avoid breathing vapour or mist. 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

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.

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.

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 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.

Precautions for safe storage

Store between the following temperatures: 6 to 28°C (42.8 to 82.4°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.

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7. Handling and storage

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

No value assigned to this material by the Australian regulatory authority.

Biological limit values

No biological limit allocated.

Engineering controls

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits. If cured material made from this product is to be cut or sanded, ensure that dust is kept below the Australian Exposure Standard for inspirable dusts (10mg/m³) or the ACGIH Exposure Standard for respirable dusts (3mg/m³).

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. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL)

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	: Liquid.
Colour / Appearance	: Yellow.
Odour	: Slight
Solubility	: Almost insoluble in water

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9 . Physical and chemical properties

Density	: 1.17 g/cm ³ [25°C]	Vapour density	: Not available.
Specific gravity	: Not available.	Vapour pressure	: <0.00001 kPa (<0.000075 mm Hg) [room temperature]
Boiling point	: >200°C	Flash point	: Closed cup: >200°C [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
Melting point	: Not available.	Flammable limits	: Not available.
Viscosity	: Dynamic (room temperature): 9000 to 13000 mPa·s	Auto-ignition temperature	: Not available.
pH	: 8 [Conc. (% w/w): 50%]		

(Typical values only - consult specification sheet)

10 . Stability and reactivity

Chemical stability	: The product is stable.
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.
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	: Irritating to eyes.
Inhalation	: No known significant effects or critical hazards.

Acute toxicity

Product/ingredient name	Exposure	Species	Dose	Result
Bisphenol A epoxy resin	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
ARALDITE F	LD50 Oral	Rat	>5000 mg/kg	-

Potential chronic health effects

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	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

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11 . Toxicological information

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	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
	Negative - Dermal - NOEL			

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Bisphenol A 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 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

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Bisphenol A epoxy resin	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

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Bisphenol A epoxy resin	Negative	Negative	Negative	Rat - Male, Female	Oral: 540 mg/kg NOEL	238 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.

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11 . Toxicological information

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
Bisphenol A epoxy resin	-	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 <i>Daphnia</i> Magna Reproduction Test	Chronic NOEC 0.3 mg/l Fresh water	Daphnia	21 days Semi-static
ARALDITE F	-	Acute EC50 3.6 mg/l	Daphnia - <i>Daphnia magna</i> Straus 1820	24 hours
	-	Acute LC50 2.4 mg/l	Fish	96 hours

Conclusion/Summary : Not available.

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
Bisphenol A epoxy resin	OECD Derived from OECD 301F (Biodegradation Test)	5 % - Not readily - 28 days	20 mg/l Oxygen consumption	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Bisphenol A epoxy resin	Fresh water 4.83 days Fresh water 3.58 days Fresh water 7.1 days	-	Not readily

Bioaccumulative potential

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12 . Ecological information

Product/ingredient name	LogP_{ow}	BCF	Potential
Bisphenol A epoxy resin	3.242	31	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. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. 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.

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.

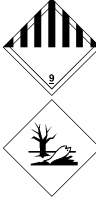
Air transport

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	UN3082	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN)	9	III	 	Hazchem code •3Z
IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN). Marine pollutant	9	III	 	Emergency schedules (EmS) F-A, S-F

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14 . Transport information

IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN)	9	III		Passenger and Cargo Aircraft Quantity limitation: 450 L Packaging instructions: 964 Cargo Aircraft Only Quantity limitation: 450 L Packaging instructions: 964
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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	All components are listed or exempted.
Korea	KECI	All components are listed or exempted.
New Zealand	NZIoC	All components are listed or exempted.
Philippines	PICCS	All components are listed or exempted.
United States	TSCA	All components are listed or exempted.

Carcinogen schedule (Australia) : None Allocated.

Poison schedule (Australia) : S5

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.

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

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16 . Other information

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.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS