

1. IDENTIFICATION

Product Name	Bisphenol F Liquid Epoxy Resin
Other Names	No Data Available
Uses	Surface coatings as on household appliances and gas storage vessels; adhesive for composites and for metals, glass, and ceramics; casting metal-forming tools and dies; encapsulation of electrical parts; filament-wound pipe and pressure vessels; floor surfacing and wall panels; neutron-shielding materials; cements and mortars; nonskid road surfacing; rigid foams; matrix for stained glass.
Chemical Family	No Data Available
Chemical Formula	No Data Available
Chemical Name	Epoxy Resin
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 5

Globally Harmonised System

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories Serious Eye Damage/Irritation - Category 2A
 Skin Corrosion/Irritation - Category 2
 Sensitisation (Skin) - Category 1
 Long-term Hazard To The Aquatic Environment - Category 2
 Acute Toxicity (Oral) - Category 5



Signal Word Warning

Hazard Statements

H303 May be harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	P261	Avoid breathing dust/fume/gas/mist/vapours/spray.	
	P264	Wash exposed skin thoroughly after handling.	
	P272	Contaminated work clothing should not be allowed out of the workplace.	
	P273	Avoid release to the environment.	
	Response	P280	Wear protective gloves/protective clothing/eye protection/face protection.
		P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P321	Specific treatment (see First Aid Measures on Safety Data Sheet).
		P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
		P337 + P313	If eye irritation persists: Get medical advice/attention.
		P362	Take off contaminated clothing and wash before reuse.
		P363	Wash contaminated clothing before reuse.
		P391	Collect spillage.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.	

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight 700)	No Data Available	25068-38-6	55.0 - 75.0 %

Reaction product of phenol-formaldehyde Novolac with epichlorohydrin	No Data Available	28064-14-4	25.0 - 45.0 %
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4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	Rinse out mouth and then drink plenty of water. Do not induce vomiting; call for medical help immediately.
Eye	Rinse opened eye for 15 minutes under running water. If symptom persists consult a doctor.
Skin	Immediately wash with water and soap and rinse thoroughly. If skin irritation continues, consult a doctor.
Inhaled	Supply fresh air and to be sure call for a doctor. In case of unconsciousness place patient stably in side position for transportation.
Advice to Doctor	Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Medical Conditions Aggravated by Exposure	Allergic reactions Irritant effects

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, remove containers from the path of fire.
Flammability Conditions	Product is combustible.
Extinguishing Media	CO ₂ , powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Use fire extinguishing methods suitable to surrounding conditions.
Fire and Explosion Hazard	Product does not present an explosion hazard.
Hazardous Products of Combustion	Carbon monoxide (CO), Carbon dioxide (CO ₂), Phenolics.
Special Fire Fighting Instructions	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit. Please note: Structural fire fighters uniform will provide limited protection.
Flash Point	>250 °C
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	>300 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Eliminate all sources of ignition. Increase ventilation. Avoid walking through spilled product as it may be slippery. Stop leak if safe to do so. Use clean, non-sparking tools and equipment.
Clean Up Procedures	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Pick up mechanically. For large liquid spills (>1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal.
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours.
Storage	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Protect from direct sunlight, moisture and static discharges. This product has a UN classification of 3082 and a Dangerous Goods Class 9 (Miscellaneous) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail. NOTE: This product is subject to special provision AU01 according to The ADG7. SP No. AU01 Environmentally Hazardous Substances meeting the descriptions of UN 3082 are not subject to this Code when transported by road or rail in; (a) packagings that do not incorporate a receptacle exceeding 450 kg(L); or (b) IBCs.
Container	Container type/packaging must comply with all applicable local legislation. Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No exposure limit has been established for this product.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	RESPIRATOR: Wear a respirator with suitable filter for organic gases and vapours (Type A) if engineering controls are inadequate (AS1715/1716). EYES: Chemical goggles to prevent splashing in the eyes (AS1336/1337). HANDS: Butyl rubber gloves break through time 4hr (AS2161). CLOTHING: Chemical-resistant coveralls and safety footwear (AS3765/2210).
Work Hygienic Practices	No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Mild
Colour	Light yellow
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	>150 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Not miscible or difficult to mix 25°C
Specific Gravity	1,17-1,2 g/cm ³
Flash Point	>250 °C
Auto Ignition Temp	>300 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available

Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	0
VOC Volume	No Data Available
Additional Characteristics	No Data Available
Potential for Dust Explosion	Product is a liquid.
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	No Data Available
Release of Invisible Flammable Vapours and Gases	No Data Available

10. STABILITY AND REACTIVITY

General Information	Reactivity When properly handled and stored, no dangerous reaction is known.
Chemical Stability	This product is stable under prescribed use and storage.
Conditions to Avoid	To avoid thermal decomposition do not overheat. Avoid temperature above 300 °C. Potentially violent decomposition can occur above 350 °C
Materials to Avoid	Strong oxidizing agents, Amines.
Hazardous Decomposition Products	Carbon monoxide (CO) and carbon dioxide (CO ₂), Phenol.
Hazardous Polymerisation	Reacts with amines. Reacts with acids, alkalis and oxidising agents. Masses of more than one pound (0.5 kg) of product plus an aliphatic amine will cause irreversible polymerization with considerable heat build-up.

11. TOXICOLOGICAL INFORMATION

General Information	25068-38-6 reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight 700): Oral LD50 >2000 mg/kg (rat) Dermal LD50 >2000 mg/kg (rat)
	28064-14-4 Reaction product of phenol-formaldehyde Novolac with epichlorohydrin: Oral LD50 >5000 mg/kg (rat)

Skin corrosion/irritation:
 Causes skin irritation.
 Rabbit: irritating to the skin (OECD N/A; US EPA Guide. PB82-232984)
 · Serious eye damage/eye irritation:
 Causes serious eye irritation.
 Rabbit: irritating to the eye (OECD 405)
 · Respiratory or skin sensitization:
 Guinea Pigs: Sensitizing to the skin (OECD or EPA OPPTS 870,2600)
 May cause an allergic skin reaction.
 · Germ Cell Mutagenicity: Not classified based on available data.
 · Carcinogenicity: Not classified based on available data.
 · Reproductive Toxicity: Not classified based on available data.
 · Specific Target Organ Toxicity - Single Exposure (STOT SE): Not classified based on available data.
 · Specific Target Organ Toxicity - Repeated Exposure (STOT RE):
 Not classified based on available data.
 · Aspiration Hazard:
 Not classified based on available data.
 Based on physical properties, not likely to be an aspiration hazard.
 · Primary irritant effect:
 · Skin corrosion/irritation Irritant to skin and mucous membranes.
 · Serious eye damage/irritation Irritating effect.
 · Respiratory or skin sensitisation Sensitisation possible through skin contact.
 · Additional toxicological information:
 Harmful
 Irritant

EyeIrritant Causes serious eye irritation.

Ingestion May be harmful if swallowed. Slightly toxic, may cause gastric irritation.

Inhalation Not likely to occur.

SkinIrritant May be harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Carcinogen Category No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity Toxic to aquatic life with long lasting effects.

25068-38-6 reaction product: bisphenol-A-(epichlorohydrin) epoxy resin (number average molecular weight 700):
 EC50/48h (static) 9,4 mg/l (algae) (EPA-660/3-75-009)
 IC50 (static) >100 mg/l (microorganism) (3h)
 LC50/48h (static) 2,7 mg/l (invertebrate) (EPA-660/3-75-009)
 LC50/96h 1,2 mg/l (fish) (EPA-660/3-75-009, semi-static)
 NOEC (static) 4,2 mg/l (algae) (EPA-660/3-75-009, 72h)
 0,3 mg/l (invertebrate) (OECD 211, semi-static, 21d)

28064-14-4 Reaction product of phenol-formaldehyde Novolac with epichlorohydrin:
 EC50/48h 3,5 mg/l (daphnia)
 EC50/96h 5,7 mg/l (fish)

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
 Do not allow product to reach ground water, water course or sewage system.
 Danger to drinking water if even small quantities leak into the ground.
 Also poisonous for fish and plankton in water bodies.
 Toxic for aquatic organisms

Persistence/Degradability No data currently available for the mixture product itself. Available data for the individual component(s) is listed below:
 Component: Epoxy Resin (CAS No 25068-38-6)
 Degradation : 12% (28d, OECD 301F)
 Not easily biodegradable.
 ?Component: Epoxy Resin (CAS No 28064-14-4)
 Degradation : 0% (28d, EU Method C.4-E)
 Not easily biodegradable.
 Information based on a structurally similar material.

Mobility No data currently available for the mixture product itself. Available data for the individual component(s) is listed below:
 Component: Epoxy Resin (CAS No 25068-38-6)
 Partition coefficient, soil organic carbon/water (Koc) : 445 @ 20 °C
 Potential for mobility in soil is medium (Koc between 150 and 500).

Level III Fugacity Modelling:
Soil: 84.3 %
Water: 13.8 %
Sediment: 1.9 %
Air: 0,000026 %
Component: Epoxy Resin (CAS No 28064-14-4)
Henry's Law Constant (H) : 9,6 x 10⁻⁷ Pa m³ mol⁻¹ (QSAR)

Environmental Fate

Do NOT let product reach waterways, drains and sewers.

Bioaccumulation Potential

No data currently available for the mixture product itself. Available data for the individual component(s) is listed below:

Component: Epoxy Resin (CAS No 25068-38-6)
Bioconcentration Factor (BCF) : 31 (QSAR)
Partition coefficient, n-octanol/water (log Pow) : 3.242 @ 25 °C
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Component: Epoxy Resin (CAS No 28064-14-4)

For this family of materials:

Partition coefficient, n-octanol/water (log Pow) : 2.7-3.6
Bioconcentration Factor (BCF) : 150 L/kg (QSAR)
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Information based on a structurally similar material.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS

General Information

Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.

Special Precautions for Land Fill

Contact a specialist disposal company or the local waste regulator for advice. Incinerate at an approved site following all local regulations. This material may be suitable for approved landfill.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	EPIKOTE 235
Class	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	SPAU01

Land Transport (Malaysia)

ADR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epichlorhydrin Bisphenol A Resin)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3082
Hazchem	•3Z
Pack Group	III

Special Provision No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epichlorhydrin Bisphenol A Resin)
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
EPG 47 Low To Moderate Hazard Substances
UN Number 3082
Hazchem •3Z
Pack Group III
Special Provision No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epichlorhydrin Bisphenol A Resin)
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
ERG 171 Substances (Low to Moderate Hazard)
UN Number 3082
Hazchem 3Z
Pack Group III
Special Provision No Data Available

Sea Transport

IMDG Code

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epichlorhydrin Bisphenol A Resin)
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
UN Number 3082
Hazchem 3Z
Pack Group III
Special Provision No Data Available
EMS FA,SF
Marine Pollutant Yes

Air Transport

IATA DGR

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epichlorhydrin Bisphenol A Resin)
Class 9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s) No Data Available
UN Number 3082
Hazchem 3Z
Pack Group III
Special Provision No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION**General Information** No Data Available**Poisons Schedule (Aust)** 5**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code Not Assessed**National/Regional Inventories**

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Listed
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Not Determined
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

16. OTHER INFORMATION**Related Product Codes** EPRESI2350, EPRESJ1000, EPRESJ1001, EPRESJ1002**Revision** 2**Revision Date** 22 Jun 2015**Key/Legend**
< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere

CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO₂ Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Health and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight