SAFETY DATA SHEET
BISPHENOL A, EPOXY RESIN
REVISION 5, DATE 06 JAN 2021

1. IDENTIFICATION

Product Name	**Bisphenol A, Epoxy Resin**
Other Names	BE-186 Series; BE-188 Series; bisphenol A, (chloromethyl)oxirane polymer; bisphenol A, epichlorohydrin polymer; epichlorohydrin, bisphenol A resin
Uses	Coating; Thinner, diluent; Paint; Adhesives; Casting, potting, encapsulation for electrical components; Protective coating, laminating and civil engineering. *Uses advised against: Any uses where product/reformulation is classified as skin irritant AND to be used without recommended skin protection or personal protective equipment. Any uses in articles where the residual product is greater than 1,000 ppm.
Chemical Family	No Data Available
Chemical Formula	(C15H16O2.C3H5ClO)x
Chemical Name	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane
Product Description	Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight <=700).

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox 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	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, 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	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
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) Schedule 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

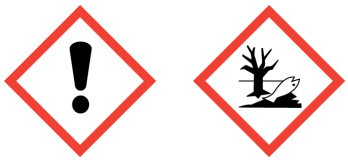
Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Irritation - Category 2

Sensitisation (Skin) - Category 1

Long-term Hazard To The Aquatic Environment - Category 2

Pictograms



Signal Word Warning

Hazard Statements

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.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/eye protection/face protection.
Response	**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.
	P333 + P313	If skin irritation or rash occurs: Get medical advice.
	P337 + P313	If eye irritation persists: Get medical advice.
	P391	Collect spillage.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
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)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Bisphenol A (epichlorohydrin) epoxy resin	(C15H16O2.C3H5ClO)x	25068-38-6	100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth. Call a Poison Centre or doctor/physician if you feel unwell.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove and isolate contaminated clothing and shoes immediately. Wash skin with plenty of soap and running water. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. *Monitor circulation.
Medical Conditions Aggravated by Exposure	May cause an allergic skin reaction.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Do not inhale explosion gases or combustion gases.
Flammability Conditions	May burn but does not ignite readily.
Extinguishing Media	Use water spray, alcohol-resistant foam, dry powder or Carbon dioxide (CO2) for extinction - Do not use water with full jet.
Fire and Explosion Hazard	Containers may explode when heated.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic fumes, including Carbon monoxide (CO), Carbon dioxide (CO2), Phenols.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (including fire fighting helmet, coat, trousers, boots, and gloves).
Flash Point	266 °C (at 1013 hPa)
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	•3Z

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources (no smoking, flares, sparks or flames). Do not touch or walk through spilled material. Avoid contact with eyes, skin and clothing.
Clean Up Procedures	Pick up with sand or other non-combustible absorbent material and place into containers for later disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Do not allow to enter sewers/surface or ground water. Inform respective authorities in case of seepage into water course or sewage system.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unprotected/unauthorised personnel away. Stay upwind and/or uphill.
Personal Precautionary Measures	Wear protective equipment (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with eyes, skin and clothing. Do not ingest. Wear protective equipment (see SECTION 8). Avoid release to the environment - Collect spillage (see SECTION 6). Protect against electrostatic charges.
Storage	Store in a cool, dry and well-ventilated place. Protect from heat and direct sunlight. Keep container tightly closed. Keep away from foodstuffs, beverages and feed. Keep away from incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	Contains no substances with occupational exposure limit values.
Exposure Limits	No Data Available
Biological Limits	No information available.
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	- Respiratory protection: Wear suitable respiratory protective device. Recommended: In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device. - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Tightly sealed goggles; Safety glasses with side shields, or equivalent. - Hand protection: Wear protective gloves. Recommended: The glove material has to be impermeable and resistant to the product/substance/preparation, e.g. Butyl rubber, Nitrile rubber, PVC gloves, Neoprene gloves, Ethyl vinyl alcohol laminate (EVAL). - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Use protective suit. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Be sure to clean skin thoroughly after work and before breaks. Ensure that washing facilities are available at the work place.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Mild
Colour	Light yellow
pH	No Data Available
Vapour Pressure	4.6 E-8 Pa (@ 25 °C)
Relative Vapour Density	<1 g/cm3 Air = 1
Boiling Point	320 °C
Melting Point	-16 °C (at 1013 hPa)
Freezing Point	-16 °C
Solubility	6.9 mg/l in water 20°C
Specific Gravity	No Data Available
Flash Point	266 °C (at 1013 hPa)
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	1.16 - 1.18 g/cm3 [ASTM D 4052]
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	LogPow = 3.242
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	25 °C
Viscosity	7,000 - 10,000 cps (BE-186 Series) - 11,000 - 15,000 cps (BE-188 Series) (@ 25 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	Potentially violent decomposition can occur above 350 °C
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating and/or toxic fumes, including Carbon monoxide (CO), Carbon dioxide (CO2), Phenols.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	When properly handled and stored, no dangerous reaction is known.
Chemical Stability	This product is stable under prescribed use and storage.
Conditions to Avoid	Avoid temperatures above 300 °C. *Potentially violent decomposition can occur above 350 °C.
Materials to Avoid	Incompatible/reactive with amines, acids, alkalis and oxidising agents.
Hazardous Decomposition Products	Fire/decomposition may produce irritating and/or toxic fumes, including Carbon monoxide (CO), Carbon dioxide (CO2), Phenols.
Hazardous Polymerisation	Masses of more than one pound (0.5 kg) of product plus an aliphatic amine will cause irreversible polymerisation with considerable heat build-up.

11. TOXICOLOGICAL INFORMATION

General Information	- Acute toxicity: Low acute toxicity based on results from animal tests following oral and dermal exposure. - Skin corrosion/irritation: Causes skin irritation. Irritating to the skin (Rabbit) [OECD 404]. - Eye damage/irritation: Causes serious eye irritation. Irritating to the eye (Rabbit) [OECD 405]. - Respiratory/skin sensitisation: May cause an allergic skin reaction. Sensitizing to the skin (Mouse, Local Lymph Node Assay) [OECD 429]. - Germ cell mutagenicity: Not classified, based on available data. Various experiments have shown mixed results (limited mutagenic effects in some while no mutagenic effect in others). - Carcinogenicity: Not classified, based on available data. - Reproductive toxicity: Not classified, based on available data. - STOT (single exposure): Not classified, based on available data. - STOT (repeated exposure): Not classified, based on available data. - Aspiration toxicity: Not classified, based on available data.
Acute	
Ingestion	Acute toxicity (Oral): - LD50, Rat: >2,000 mg/kg [CAS#25068-38-6].
Other	Acute toxicity (Dermal): - LD50, Rat: >2,000 mg/kg [CAS#25068-38-6].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, fish (semi-static): 1.2 mg/l (96 h) [EPA-660/3-75-009]. - LC50, invertebrate (static): 2.7 mg/l (48 h) [EPA-660/3-75-009]. - EC50, algae (static): 9.4 mg/l (48 h) [EPA-660/3-75-009]. - IC50, microorganism (static): >100 mg/l (3 h). - NOEC, invertebrate (semi-static): 0.3 mg/l (21 d) [OECD 211]. - NOEC, algae (static): 4.2 mg/l (72 h) [EPA-660/3-75-009].
Persistence/Degradability	NOT easily biodegradable. - Degradation: 12 % (28 d) [OECD 302B]. - Rate of hydrolysis: 117 hr @ 25 °C [OECD 211].
Mobility	Partition coefficient, soil, organic carbon/water (Koc): 445 at 20 °C
Environmental Fate	Toxic to aquatic life with long lasting effects. 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.
Bioaccumulation Potential	- Bioconcentration factor (BCF): 31 - Partition coefficient, n-octanol/water (log Pow): 3.242 @ 25 °C (est.)
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Disposal must be made according to official regulations. Must not be disposed together with household garbage. Do not allow product to reach sewer system.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Bisphenol A Epoxy Resin
Class	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s)	No Data Available
EPG	171 Substances (Low to Moderate Hazard)
UN Number	No Data Available
Hazchem	•3Z
Pack Group	No Data Available
Special Provision	AU01
Comments	Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A Epoxy Resin)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	171 Substances (Low to Moderate Hazard)
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. (Bisphenol A Epoxy Resin)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	171 Substances (Low to Moderate Hazard)
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. (Bisphenol A Epoxy 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. (Bisphenol A Epoxy 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	F-A, S-F
Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A Epoxy 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)	Schedule 5

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002503 - Additives, Process Chemicals and Raw Materials (Subsidiary Hazard) Group Standard 2020

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Listed
China (IECSC)	Listed
Europe (EINECS)	Listed
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (List of Classified Substances)	Not Listed
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Taiwan (TCSI)	Listed
USA (TSCA)	Listed
Mexico (INSQ)	Not Listed

16. OTHER INFORMATION

Related Product Codes	EPRESI1400, EPRESI1800, EPRESI1860, EPRESI2101, EPRESI2150, EPRESI2200, EPRESI2201, EPRESI2202, EPRESI2203, EPRESI2204, EPRESI2205, EPRESI2208, EPRESI2300, EPRESI2400, EPRESI2500, EPRESI2501, EPRESI2502, EPRESI2503, EPRESI2504, EPRESI2505, EPRESI2506, EPRESI2550, EPRESI2600, EPRESI2601, EPRESI2700, EPRESI2800, EPRESI2801, EPRESI2802, EPRESI2803, EPRESI2804, EPRESI2805, EPRESI2806, EPRESI3501, EPRESI3800, EPRESI3801, EPRESI3802, EPRESI8300, EPRESI8301, EPRESI8302, EPRESI8700, EPRESI8800, EPRESI8900, EPRESI8901, EPRESI8902, EPRESI8950, EPRESI9200, EPRESI9201, EPRESI9202
Revision	5
Revision Date	06 Jan 2021
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** 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/cm^3 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/m^3 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
m^3 Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m^3 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 Heath 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