

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

### 1.1. Product identifier

Product Name	Epoxy Resin ER2223, part A
Product Code(s)	ER2223A, EER2223RP250G, EER2223K5K, ZE
Safety data sheet number	00532
Unique Formula Identifier (UFI)	1NF1-K0VP-T005-Y6P8
Pure substance/mixture	Mixture

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

Recommended use	Resin
Uses advised against	No specific uses advised against are identified

### 1.3. Details of the supplier of the safety data sheet

<u>Manufacturer</u>	<u>Supplier</u>
ELECTROLUBE MacDermid Alpha Electronics Solutions ASHBY PARK, COALFIELD WAY, ASHBY DE LA ZOUCH, LEICESTERSHIRE LE65 1JR UNITED KINGDOM	HK WENTWORTH LIMITED 32 RUE DE TOURNENFILS 91540 MENNECY FRANCE
+44 (0)1530 419600 +44 (0)1530 416640 info@electrolube.com	+33 (0) 1 82 88 47 94 info@electrolube.com

For further information, please contact

**E-mail address** info@electrolube.com

### 1.4. Emergency telephone number

Emergency Telephone	POISON INFORMATION CENTRE (Beaumont Hospital, Republic of Ireland only) +353 (0)1 809 2166 (08:00 - 22:00)
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**Emergency Telephone - IN CASE OF EMERGENCY CALL: +44 1865 407333 (24hr, Provided by Carechem 24)**

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to

Regulation (EC) No. 1272/2008 [CLP]

<b>Skin corrosion/irritation</b>	Category 2 - (H315)
<b>Serious eye damage/eye irritation</b>	Category 2 - (H319)
<b>Skin sensitisation</b>	Category 1 - (H317)
<b>Chronic aquatic toxicity</b>	Category 2 - (H411)

## 2.2. Label elements

Contains Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight  $\leq 700$ ), 1,6-bis(2,3-epoxypropoxy)hexane, formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol, oxirane, mono[(C12-14-alkyloxy)methyl] derivs.



### 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 - EU (§28, 1272/2008)

P261 - Avoid breathing vapours/spray.  
P273 - Avoid release to the environment.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P302 + P352 - IF ON SKIN: Wash with plenty of 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.  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

## 2.3. Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating or toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

Chemical name	Weight-%	REACH registration	EC No (EU)	Classification according	Specific	M-Factor	M-Factor
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		number	Index No)	to Regulation (EC) No. 1272/2008 [CLP]	concentration limit (SCL)		(long-term)
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) 25068-38-6	60-100	01-2119456619-26-00 00	500-033-5	Aquatic Chronic 2 (H411) Skin Sens. 1 (H317) Eye Irrit. 2 (H319) Skin Irrit. 2 (H315)	Eye Irrit. 2 :: C>=5% Skin Irrit. 2 :: C>=5%	-	-
1,6-bis(2,3-epoxypropoxy)hexane 16096-31-4	10-30	01-2119463471-41-00 00	240-260-4	Aquatic Chronic 3 (H412) Skin Sens. 1 (H317) Eye Irrit. 2 (H319) Skin Irrit. 2 (H315)	-	-	-
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropylene and phenol 9003-36-5	0.1-1	01-2119454392-40-00 00	500-006-8	Aquatic Chronic 2 (H411) Skin Sens. 1 (H317) Skin Irrit. 2 (H315)	-	-	-
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	0.1-1	01-2119485289-22-00 00	271-846-8	Skin Sens. 1 (H317) Skin Irrit. 2 (H315)	-	-	-
Cyclohexanone 108-94-1	<0.1	01-2119453616-35-00 00	203-631-1	Flam. Liq. 3 (H226) Acute Tox. 4 (H332)	-	-	-

**Full text of H- and EUH-phrases: see section 16**

Acute Toxicity Estimate

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) 25068-38-6	11400	No data available	No data available	No data available	No data available
1,6-bis(2,3-epoxypropoxy)hexane 16096-31-4	300	No data available	No data available	No data available	No data available
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropylene and phenol 9003-36-5	2000	No data available	No data available	No data available	No data available
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	17100	3987	No data available	No data available	No data available
Cyclohexanone 108-94-1	1544	947	6.2	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No.

1907/2006 (REACH), Article 59)

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

<b>General advice</b>	Show this safety data sheet to the doctor in attendance.
<b>Inhalation</b>	Remove to fresh air. Get medical attention immediately if symptoms occur.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
<b>Skin contact</b>	May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a doctor. Wash off immediately with soap and plenty of water for at least 15 minutes.
<b>Ingestion</b>	Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.
<b>Self-protection of the first aider</b>	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

### 4.2. Most important symptoms and effects, both acute and delayed

<b>Symptoms</b>	Itching. Rashes. Hives. May cause redness and tearing of the eyes. Burning sensation.
<b>Effects of Exposure</b>	No information available.

### 4.3. Indication of any immediate medical attention and special treatment needed

<b>Note to doctors</b>	May cause sensitisation in susceptible persons. Treat symptomatically.
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## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Large Fire</b>	CAUTION: Use of water spray when fighting fire may be inefficient.
<b>Unsuitable extinguishing media</b>	Do not scatter spilled material with high pressure water streams.

### 5.2. Special hazards arising from the substance or mixture

<b>Specific hazards arising from the chemical</b>	Product is or contains a sensitiser. May cause sensitisation by skin contact.
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### 5.3. Advice for firefighters

<b>Special protective equipment and precautions for fire-fighters</b>	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.
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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

<b>Personal precautions</b>	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8.
<b>For emergency responders</b>	Use personal protection recommended in Section 8.

### 6.2. Environmental precautions

<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so.
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### 6.3. Methods and material for containment and cleaning up

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for cleaning up</b>	Take up mechanically, placing in appropriate containers for disposal.
<b>Prevention of secondary hazards</b>	Clean contaminated objects and areas thoroughly observing environmental regulations.

### 6.4. Reference to other sections

<b>Reference to other sections</b>	See section 8 for more information. See section 13 for more information.
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## **SECTION 7: Handling and storage**

### 7.1. Precautions for safe handling

<b>Advice on safe handling</b>	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse.
<b>General hygiene considerations</b>	Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.

### 7.2. Conditions for safe storage, including any incompatibilities

<b>Storage Conditions</b>	Keep containers tightly closed in a dry, cool and well-ventilated place.
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### 7.3. Specific end use(s)

<b>Risk Management Methods (RMM)</b>	The information required is contained in this Safety Data Sheet.
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## **SECTION 8: Exposure controls/personal protection**

### 8.1. Control parameters

<b>Exposure Limits</b>	This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
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Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) 25068-38-6	-	-	-	TWA: 1.0 mg/m <sup>3</sup>	-
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> *	TWA: 5 ppm TWA: 20 mg/m <sup>3</sup> STEL 20 ppm STEL 80 mg/m <sup>3</sup> H*	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> D*	STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> K*	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> *
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Cyclohexanone 108-94-1	STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup>	TWA: 40 mg/m <sup>3</sup> Ceiling: 80 mg/m <sup>3</sup> D*	TWA: 10 ppm TWA: 41 mg/m <sup>3</sup> H* STEL: 81.6 mg/m <sup>3</sup> STEL: 20 ppm	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> A*	TWA: 10 ppm TWA: 41 mg/m <sup>3</sup> STEL: 20 ppm STEL: 82 mg/m <sup>3</sup> iho*
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
1,6-bis(2,3-epoxypropoxy)hexane 16096-31-4	-	-	skin sensitizer	-	-
Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] 41484-35-9	-	TWA: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup> Peak: 4 mg/m <sup>3</sup>	-	-
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup>	TWA: 20 ppm TWA: 80 mg/m <sup>3</sup> H*	*	TWA: 50 ppm TWA: 200 mg/m <sup>3</sup> STEL: 100 ppm STEL: 400 mg/m <sup>3</sup> *	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> b*
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> Sk*	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> cute*	TWA: 20 ppm TWA: 80 mg/m <sup>3</sup> STEL: 50 ppm STEL: 201 mg/m <sup>3</sup> cute*	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> Ada*	STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> O*
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Cyclohexanone 108-94-1	STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> Peau*	STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> skin* TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup>	STEL: 12.3 ppm STEL: 50 mg/m <sup>3</sup> H*	TWA: 10 ppm TWA: 40 mg/m <sup>3</sup> STEL: 20 ppm STEL: 80 mg/m <sup>3</sup> H*	STEL: 80 mg/m <sup>3</sup> TWA: 40 mg/m <sup>3</sup> skóra*
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> Cutânea*	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> P*	TWA: 10 ppm TWA: 41 mg/m <sup>3</sup> K* Ceiling: 82 mg/m <sup>3</sup>	TWA: 10 ppm TWA: 40.8 mg/m <sup>3</sup> STEL: 20 ppm STEL: 81.6 mg/m <sup>3</sup> K*	TWA: 10 ppm TWA: 41 mg/m <sup>3</sup> STEL: 20 ppm STEL: 82 mg/m <sup>3</sup> vía dérmica*
Chemical name	Sweden		Switzerland	United Kingdom	
Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] 41484-35-9	-		TWA: 3 mg/m <sup>3</sup> STEL: 6 mg/m <sup>3</sup>	-	
Cyclohexanone 108-94-1	Bindande KGV: 20 ppm Bindande KGV: 81 mg/m <sup>3</sup> NGV: 10 ppm NGV: 41 mg/m <sup>3</sup>		TWA: 25 ppm TWA: 100 mg/m <sup>3</sup> STEL: 50 ppm STEL: 200 mg/m <sup>3</sup>	TWA: 10 ppm TWA: 41 mg/m <sup>3</sup> STEL: 20 ppm STEL: 82 mg/m <sup>3</sup>	

	H*	H*	Sk*
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**Biological occupational exposure limits** This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Cyclohexanone 108-94-1	-	-	-	-	0.049 µmol/mmol Creatinine (urine - 1,2-Cyclohexanediol end of shift at end of workweek) 50 mg/g Creatinine (urine - 1,2-Cyclohexanediol end of shift at end of workweek)
Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
Cyclohexanone 108-94-1	-	-	-	50 mg/L - (long-term exposure: at the end of the shift after several shifts) - urine 100 mg/L - (long-term exposure: at the end of the shift after several shifts) - urine 250 mg/L - (long-term exposure: at the end of the shift after several shifts) - urine 6 mg/L - (end of exposure or end of shift) - urine 12 mg/L - (end of exposure or end of shift) - urine 30 mg/L - (end of exposure or end of shift) - urine	-
Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII	
Cyclohexanone 108-94-1	-	8 mg/L (urine - Cyclohexanol end of shift) 80 mg/L (urine - 1,2-Cyclohexanediol end of shift)	-	80 mg/L - urine (1,2-Cyclohexanediol (with hydrolysis)) - end of shift at end of workweek 8 mg/L - urine (Cyclohexanol (with hydrolysis)) - end of shift	
Chemical name	Slovenia	Spain	Switzerland	United Kingdom	
Cyclohexanone 108-94-1	-	80 mg/L (urine - 1,2-Cyclohexanediol (with hydrolysis) end of workweek) 8 mg/L (urine - Cyclohexanol (with hydrolysis) end of shift)	100 mg/L (urine - total 1,2-Cyclohexanediol end of shift, and after several shifts (for long-term exposures)) 0.86 mmol/L (urine - total 1,2-Cyclohexanediol end of shift, and after several	2 mmol/mol creatinine - urine (Cyclohexanol) - post shift	

			shifts (for long-term exposures)) 12 mg/L (urine - total-Cyclohexanol end of shift, and after several shifts (for long-term exposures)) 0.12 mmol/L (urine - total-Cyclohexanol end of shift, and after several shifts (for long-term exposures))	
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**Derived No Effect Level (DNEL) - Workers**

Chemical name	Oral	Dermal	Inhalation
Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] 41484-35-9	-	13.8 mg/kg bw/day [4] [6]	4.9 mg/m <sup>3</sup> [4] [6]
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	-	1 mg/kg bw/day [4] [6]	3.6 mg/m <sup>3</sup> [4] [6]
Cyclohexanone 108-94-1	-	4 mg/kg bw/day [4] [6] 4 mg/kg bw/day [4] [7]	40 mg/m <sup>3</sup> [4] [6] 80 mg/m <sup>3</sup> [4] [7] 40 mg/m <sup>3</sup> [5] [6] 80 mg/m <sup>3</sup> [5] [7]

**Derived No Effect Level (DNEL) - General Public**

Chemical name	Oral	Dermal	Inhalation
Thiodiethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] 41484-35-9	0.69 mg/kg bw/day [4] [6]	-	-
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	0.5 mg/kg bw/day [4] [6]	-	0.87 mg/m <sup>3</sup> [4] [6]
Cyclohexanone 108-94-1	1.5 mg/kg bw/day [4] [6] 1.5 mg/kg bw/day [4] [7]	1 mg/kg bw/day [4] [6] 1 mg/kg bw/day [4] [7]	10 mg/m <sup>3</sup> [4] [6] 20 mg/m <sup>3</sup> [4] [7] 20 mg/m <sup>3</sup> [5] [6] 40 mg/m <sup>3</sup> [5] [7]

**Predicted No Effect Concentration (PNEC)**

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	0.1058 mg/L	0.072 mg/L	0.01058 mg/L	-	-
Cyclohexanone	0.0329 mg/L	0.329 mg/L	0.00329 mg/L	-	-

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
108-94-1					

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	307.16 mg/kg sediment dw	30.72 mg/kg sediment dw	10 mg/L	1.234 mg/kg soil dw	-
Cyclohexanone 108-94-1	0.249 mg/kg sediment dw	0.0249 mg/kg sediment dw	10 mg/L	0.0304 mg/kg soil dw	-

## 8.2. Exposure controls

<b>Engineering controls</b>	Ensure adequate ventilation, especially in confined areas.
<b>Personal protective equipment</b>	
<b>Eye/face protection</b>	Wear safety glasses with side shields (or goggles).
<b>Hand protection</b>	Wear suitable gloves. Impervious gloves.
<b>Skin and body protection</b>	Wear suitable protective clothing. Long sleeved clothing.
<b>Respiratory protection</b>	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
<b>General hygiene considerations</b>	Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.
<b>Environmental exposure controls</b>	No information available.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Physical state</b>	Liquid
<b>Appearance</b>	Liquid
<b>Colour</b>	black
<b>Odour</b>	Characteristic.
<b>Odour threshold</b>	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>Melting point / freezing point</b>	No data available	None known
<b>Initial boiling point and boiling range</b>	No data available	None known
<b>Flammability</b>	No data available	None known
<b>Flammability Limit in Air</b>		None known
<b>Upper flammability or explosive limits</b>	No data available	
<b>Lower flammability or explosive limits</b>	No data available	

Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	600-1000 mPa s @ 23°C/73.4°F	None known
Water solubility	No data available	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Vapour pressure	No data available	None known
Relative density	1.15 @ 20°C/68°F	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapour density	No data available	None known
Particle characteristics		
Particle Size	No information available	
Particle Size Distribution	No information available	

## 9.2. Other information

### 9.2.1. Information with regards to physical hazard classes

Explosive properties	Not considered to be explosive.
<b>Oxidising properties</b>	Does not meet the criteria for classification as oxidizing.

### 9.2.2. Other safety characteristics No information available

## **SECTION 10: Stability and reactivity**

### 10.1. Reactivity

Reactivity	No information available.
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### 10.2. Chemical stability

Stability	Stable under normal conditions.
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#### Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.

### 10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	None under normal processing.
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### 10.4. Conditions to avoid

Conditions to avoid	None known based on information supplied.
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### 10.5. Incompatible materials

Incompatible materials	Strong acids. Strong bases. Strong oxidising agents.
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### 10.6. Hazardous decomposition products

Hazardous decomposition products	None known based on information supplied.
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## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Information on likely routes of exposure

##### Product Information

<b>Inhalation</b>	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
<b>Eye contact</b>	Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.
<b>Skin contact</b>	May cause sensitisation by skin contact. Specific test data for the substance or mixture is not available. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. (based on components). Causes skin irritation.
<b>Ingestion</b>	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

#### Symptoms related to the physical, chemical and toxicological characteristics

**Symptoms** Itching. Rashes. Hives. Redness. May cause redness and tearing of the eyes.

#### Acute toxicity

##### Numerical measures of toxicity

No information available

##### The following values are calculated based on chapter 3.1 of the GHS document

<b>ATEmix (oral)</b>	2,431.20 mg/kg
<b>ATEmix (dermal)</b>	99,999.00 mg/kg
<b>ATEmix (inhalation-gas)</b>	99,999.00 ppm
<b>ATEmix (inhalation-vapour)</b>	99,999.00 mg/l
<b>ATEmix (inhalation-dust/mist)</b>	99,999.00 mg/l

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)	= 11400 mg/kg ( Rat )	-	-
1,6-bis(2,3-epoxypropoxy)hexan e	300 - 2000 mg/kg ( Rat )	-	-
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	> 2 g/kg ( Rat )	-	-
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	= 17100 mg/kg ( Rat )	> 3987 mg/kg ( Rabbit )	-
Cyclohexanone	= 1544 mg/kg ( Rat )	= 947 mg/kg ( Rabbit )	> 6.2 mg/L ( Rat ) 4 h

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Skin corrosion/irritation** Classification based on data available for ingredients. Causes skin irritation.

<b>Serious eye damage/eye irritation</b>	Classification based on data available for ingredients. Causes serious eye irritation.
<b>Respiratory or skin sensitisation</b>	May cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	Based on available data, the classification criteria are not met.
<b>Reproductive toxicity</b>	Based on available data, the classification criteria are not met.
<b>STOT - single exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT - repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard</b>	Based on available data, the classification criteria are not met.

#### 11.2. Information on other hazards

##### 11.2.1. Endocrine disrupting properties

**Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

##### 11.2.2. Other information

**Other adverse effects** No information available.

## **SECTION 12: Ecological information**

### 12.1. Toxicity

**Ecotoxicity** Toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Cyclohexanone	-	LC50: 481 - 578mg/L (96h, Pimephales promelas)	-	-

### 12.2. Persistence and degradability

**Persistence and degradability** No information available.

### 12.3. Bioaccumulative potential

**Bioaccumulation** There is no data for this product.

Chemical name	Partition coefficient
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	3.77
Cyclohexanone	0.86

#### 12.4. Mobility in soil

**Mobility in soil** No information available.

#### 12.5. Results of PBT and vPvB assessment

**PBT and vPvB assessment** The product does not contain any substance(s) classified as PBT or vPvB above the threshold of declaration.

Chemical name	PBT and vPvB assessment
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight $\leq$ 700)	The substance is not PBT / vPvB
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	The substance is not PBT / vPvB
oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	The substance is not PBT / vPvB
Cyclohexanone	The substance is not PBT / vPvB

#### 12.6. Endocrine disrupting properties

**Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### 12.7. Other adverse effects

No information available.

### **SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Contaminated packaging** Do not reuse empty containers.

### **SECTION 14: Transport information**

#### IATA

- 14.1 UN number or ID number** UN3082
- 14.2 UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight  $\leq$  700) , formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol)
- 14.3 Transport hazard class(es)** 9
- 14.4 Packing group** III
- Description** UN3082, Environmentally hazardous substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight  $\leq$  700)), 9, III
- 14.5 Environmental hazards** Yes

**14.6 Special precautions for user**

Special Provisions A97, A158, A197  
ERG Code 9L

**IMDG**

14.1 UN number or ID number UN3082  
14.2 UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) , formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol)  
14.3 Transport hazard class(es) 9  
14.4 Packing group III  
Description UN3082, Environmentally hazardous substances, liquid, n.o.s., 9, III, Marine pollutant  
14.5 Environmental hazards Yes  
14.6 Special precautions for user  
Special Provisions 274, 335, 969  
EmS-No F-A, S-F  
14.7 Maritime transport in bulk according to IMO instruments No information available

**RID**

14.1 UN number or ID number UN3082  
14.2 UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) , formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol)  
14.3 Transport hazard class(es) 9  
14.4 Packing group III  
Description UN3082, Environmentally hazardous substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)), 9, III  
14.5 Environmental hazards Yes  
14.6 Special precautions for user  
Special Provisions 274, 335, 375, 601  
Classification code M6

**ADR**

14.1 UN number or ID number UN3082  
14.2 UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) , formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol)  
14.3 Transport hazard class(es) 9  
14.4 Packing group III  
Description UN3082, Environmentally hazardous substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)), 9, III, (-)  
14.5 Environmental hazards Yes  
14.6 Special precautions for user  
Special Provisions 274, 335, 601, 375  
Classification code M6  
Tunnel restriction code (E)

**SECTION 15: Regulatory information**

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

Chemical name	French RG number
Cyclohexanone - 108-94-1	RG 84

**Water hazard class (WGK)** obviously hazardous to water (WGK 2)

**European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

**Authorisations and/or restrictions on use:**

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) - 25068-38-6	Use restricted. See item 75.	-
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. - 68609-97-2	Use restricted. See item 75.	-

**Persistent Organic Pollutants**

Not applicable

**Ozone-depleting substances (ODS) regulation (EC) 1005/2009**

Not applicable

**International Inventories**

<b>TSCA</b>	Contact supplier for inventory compliance status
<b>DSL/NDSL</b>	Contact supplier for inventory compliance status
<b>EINECS/ELINCS</b>	Contact supplier for inventory compliance status
<b>ENCS</b>	Contact supplier for inventory compliance status
<b>IECSC</b>	Contact supplier for inventory compliance status
<b>KECL</b>	Contact supplier for inventory compliance status
<b>PICCS</b>	Contact supplier for inventory compliance status
<b>AIIC</b>	Contact supplier for inventory compliance status
<b>NZIoC</b>	Contact supplier for inventory compliance status

**Legend:**

- TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- ENCS** - Japan Existing and New Chemical Substances
- IECSC** - China Inventory of Existing Chemical Substances
- KECL** - Korean Existing and Evaluated Chemical Substances
- PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- AIIC** - Australian Inventory of Industrial Chemicals
- NZIoC** - New Zealand Inventory of Chemicals

**15.2. Chemical safety assessment**

**Chemical Safety Report** No information available

## SECTION 16: Other information

### Key or legend to abbreviations and acronyms used in the safety data sheet

#### Full text of H-Statements referred to under section 3

H226 - Flammable liquid and vapour  
 H315 - Causes skin irritation  
 H317 - May cause an allergic skin reaction  
 H319 - Causes serious eye irritation  
 H332 - Harmful if inhaled  
 H411 - Toxic to aquatic life with long lasting effects  
 H412 - Harmful to aquatic life with long lasting effects  
 H413 - May cause long lasting harmful effects to aquatic life

#### Legend

SVHC: Substances of Very High Concern for Authorisation:

#### Legend Section 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)  
 Ceiling Maximum limit value \* Skin designation  
 + Sensitisers

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

#### Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)  
 U.S. Environmental Protection Agency ChemView Database  
 European Food Safety Authority (EFSA)  
 European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA\_RAC)  
 European Chemicals Agency (ECHA) (ECHA\_API)  
 EPA (Environmental Protection Agency)  
 Acute Exposure Guideline Level(s) (AEGL(s))  
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act  
 U.S. Environmental Protection Agency High Production Volume Chemicals  
 Food Research Journal

Hazardous Substance Database  
International Uniform Chemical Information Database (IUCLID)  
National Institute of Technology and Evaluation (NITE)  
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)  
NIOSH (National Institute for Occupational Safety and Health)  
National Library of Medicine's ChemID Plus (NLM CIP)  
National Library of Medicine's PubMed database (NLM PUBMED)  
National Toxicology Program (NTP)  
New Zealand's Chemical Classification and Information Database (CCID)  
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications  
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme  
Organisation for Economic Co-operation and Development Screening Information Data Set  
World Health Organization

Revision date 27/10/2023

**Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)**

**Disclaimer**

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.**

**End of Safety Data Sheet**

Revision date 02/10/2023

Revision Number 0.83

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

### 1.1. Product identifier

Product Name	Epoxy Resin ER2223, part B
Product Code(s)	ER2223B, EER2223RP250G, EER2223K5K, ZE
Safety data sheet number	00460
Unique Formula Identifier (UFI)	PG81-5063-R00H-CMQM
Pure substance/mixture	Mixture

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

Recommended use	Hardener
Uses advised against	No specific uses advised against are identified

### 1.3. Details of the supplier of the safety data sheet

<u>Manufacturer</u>	<u>Supplier</u>
ELECTROLUBE MacDermid Alpha Electronics Solutions ASHBY PARK, COALFIELD WAY, ASHBY DE LA ZOUCH, LEICESTERSHIRE LE65 1JR UNITED KINGDOM	HK WENTWORTH LIMITED 32 RUE DE TOURNENFILS 91540 MENNECY FRANCE
+44 (0)1530 419600 +44 (0)1530 416640 info@electrolube.com	+33 (0) 1 82 88 47 94 info@electrolube.com

For further information, please contact

**E-mail address** info@electrolube.com

### 1.4. Emergency telephone number

Emergency Telephone	POISON INFORMATION CENTRE (Beaumont Hospital, Republic of Ireland only) +353 (0)1 809 2166 (08:00 - 22:00)
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**Emergency Telephone - IN CASE OF EMERGENCY CALL: +44 1865 407333 (24hr, Provided by Carechem 24)**

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to

Regulation (EC) No. 1272/2008 [CLP]

<b>Acute toxicity - Oral</b>	Category 4 - (H302)
<b>Skin corrosion/irritation</b>	Category 1 - (H314)
<b>Serious eye damage/eye irritation</b>	Category 1 - (H318)
<b>Skin sensitisation</b>	Category 1B - (H317)
<b>Specific target organ toxicity — repeated exposure</b>	Category 2 - (H373)

## 2.2. Label elements

Contains 4,4'-methylenebis(cyclohexylamine)



### Signal word

Danger

### Hazard statements

H302 - Harmful if swallowed

H314 - Causes severe skin burns and eye damage

H317 - May cause an allergic skin reaction

H373 - May cause damage to organs through prolonged or repeated exposure

### Precautionary Statements - EU (§28, 1272/2008)

P280 - Wear protective gloves/protective clothing and eye/face protection.

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

## 2.3. Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating or toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

Chemical name	Weight-%	REACH registration number	EC No (EU Index No)	Classification according to Regulation (EC) No.	Specific concentration	M-Factor	M-Factor (long-term)
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				1272/2008 [CLP]	limit (SCL)		
4,4'-methylenebis(cyclohexylamine) 1761-71-3	60-100	01-2119541673-38-00 01	217-168-8	Skin Corr. 1B (H314) STOT RE 2 (H373) Acute Tox. 4 (H302) Skin Sens. 1B (H317) Eye Dam. 1 (H318)	-	-	-

**Full text of H- and EUH-phrases: see section 16**

Acute Toxicity Estimate

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
4,4'-methylenebis(cyclohexylamine) 1761-71-3	1000	2110	No data available	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration  $\geq 0.1\%$  (Regulation (EC) No. 1907/2006 (REACH), Article 59)

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

<b>General advice</b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
<b>Inhalation</b>	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical attention.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.
<b>Skin contact</b>	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.
<b>Ingestion</b>	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.
<b>Self-protection of the first aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).

### 4.2. Most important symptoms and effects, both acute and delayed

<b>Symptoms</b>	Burning sensation. Itching. Rashes. Hives.
<b>Effects of Exposure</b>	No information available.

#### 4.3. Indication of any immediate medical attention and special treatment needed

<b>Note to doctors</b>	Product is a corrosive material. Use of gastric lavage or emesis is contra-indicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitisation in susceptible persons. Treat symptomatically.
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### **SECTION 5: Firefighting measures**

#### 5.1. Extinguishing media

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Large Fire** CAUTION: Use of water spray when fighting fire may be inefficient.

**Unsuitable extinguishing media** Do not scatter spilled material with high pressure water streams.

#### 5.2. Special hazards arising from the substance or mixture

**Specific hazards arising from the chemical** The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapours. Product is or contains a sensitiser. May cause sensitisation by skin contact.

#### 5.3. Advice for firefighters

**Special protective equipment and precautions for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

### **SECTION 6: Accidental release measures**

#### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other information** Refer to protective measures listed in Sections 7 and 8.

**For emergency responders** Use personal protection recommended in Section 8.

#### 6.2. Environmental precautions

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

#### 6.3. Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Take up mechanically, placing in appropriate containers for disposal.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

#### 6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

**Advice on safe handling** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse.

**General hygiene considerations** Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

### 7.3. Specific end use(s)

**Risk Management Methods (RMM)** The information required is contained in this Safety Data Sheet.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

**Exposure Limits** This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Biological occupational exposure limits** This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

**Derived No Effect Level (DNEL) - Workers**

**Derived No Effect Level (DNEL) - General Public** .

**Predicted No Effect Concentration (PNEC)** .

### 8.2. Exposure controls

**Engineering controls** Ensure adequate ventilation, especially in confined areas.

**Personal protective equipment**

<b>Eye/face protection</b>	Tight sealing safety goggles. Face protection shield.
<b>Hand protection</b>	Wear suitable gloves. Impervious gloves.
<b>Skin and body protection</b>	Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.
<b>Respiratory protection</b>	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
<b>General hygiene considerations</b>	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.
<b>Environmental exposure controls</b>	No information available.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Physical state</b>	Liquid
<b>Appearance</b>	Liquid
<b>Colour</b>	Colourless
<b>Odour</b>	Characteristic.
<b>Odour threshold</b>	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>Melting point / freezing point</b>	17.7 - 65.4 °C	-17.7 - 65.4°C/0.14 - 149.72°F
<b>Initial boiling point and boiling range</b>	320 °C	320°C/608°F @ 1013 hPa
<b>Flammability</b>	No data available	None known
<b>Flammability Limit in Air</b>		None known
<b>Upper flammability or explosive limits</b>	No data available	
<b>Lower flammability or explosive limits</b>	No data available	
<b>Flash point</b>	160 °C	None known
<b>Autoignition temperature</b>	No data available	None known
<b>Decomposition temperature</b>		None known
<b>pH</b>	11.6	pH (concentrated solution): 11.6
<b>pH (as aqueous solution)</b>	No data available	None known
<b>Kinematic viscosity</b>	No data available	None known
<b>Dynamic viscosity</b>	29.6 mPa s @ 40°C/104°F	None known
<b>Water solubility</b>	No data available 12.3 g/l water @ 20°C/68°F	None known
<b>Solubility(ies)</b>	No data available	None known
<b>Partition coefficient</b>	log Pow: 2.03	None known
<b>Vapour pressure</b>	0.0549 Pa @ 20°C/68°F	None known
<b>Relative density</b>	0.964 @ 20°C/68°F	None known
<b>Bulk density</b>	No data available	
<b>Liquid Density</b>	No data available	
<b>Relative vapour density</b>	No data available	None known
<b>Particle characteristics</b>		
<b>Particle Size</b>	No information available	
<b>Particle Size Distribution</b>	No information available	

### 9.2. Other information

9.2.1. Information with regards to physical hazard classes

Explosive properties	Not considered to be explosive.
<b>Oxidising properties</b>	Does not meet the criteria for classification as oxidizing.

9.2.2. Other safety characteristics

No information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reactivity	No information available.
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### 10.2. Chemical stability

Stability	Stable under normal conditions.
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### Explosion data

Sensitivity to mechanical impact	None.
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Sensitivity to static discharge	None.
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### 10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	None under normal processing.
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### 10.4. Conditions to avoid

Conditions to avoid	Exposure to air or moisture over prolonged periods.
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### 10.5. Incompatible materials

Incompatible materials	Acids. Bases. Oxidising agent.
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### 10.6. Hazardous decomposition products

Hazardous decomposition products	None known based on information supplied.
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## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Information on likely routes of exposure

#### Product Information

<b>Inhalation</b>	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal.
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<b>Eye contact</b>	Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.
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**Skin contact** Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitisation by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**Ingestion** Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Symptoms** Redness. Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.

**Acute toxicity**

**Numerical measures of toxicity**  
No information available

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 1,000.00 mg/kg  
ATEmix (dermal) 2,110.00 mg/kg  
ATEmix (inhalation-gas) 99,999.00 ppm  
ATEmix (inhalation-vapour) 99,999.00 mg/l  
ATEmix (inhalation-dust/mist) 99,999.00 mg/l

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
4,4'-methylenebis(cyclohexylamine)	= 1000 mg/kg ( Rat )	= 2110 mg/kg ( Rabbit )	-

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Skin corrosion/irritation** Classification based on data available for ingredients. Causes severe skin burns and eye damage.

**Serious eye damage/eye irritation** Classification based on data available for ingredients. Causes serious eye damage. Causes burns.

**Respiratory or skin sensitisation** Classification based on data available for ingredients. May cause an allergic skin reaction.

**Germ cell mutagenicity** Based on available data, the classification criteria are not met.

**Carcinogenicity** Based on available data, the classification criteria are not met.

**Reproductive toxicity** Based on available data, the classification criteria are not met.

**STOT - single exposure** Based on available data, the classification criteria are not met.

**STOT - repeated exposure** May cause damage to organs through prolonged or repeated exposure.

**Aspiration hazard** Based on available data, the classification criteria are not met.

## 11.2. Information on other hazards

### **11.2.1. Endocrine disrupting properties**

**Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### **11.2.2. Other information**

**Other adverse effects** No information available.

## **SECTION 12: Ecological information**

### 12.1. Toxicity

**Ecotoxicity** The environmental impact of this product has not been fully investigated.

### 12.2. Persistence and degradability

**Persistence and degradability** No information available.

### 12.3. Bioaccumulative potential

**Bioaccumulation** There is no data for this product.

Chemical name	Partition coefficient
4,4'-methylenebis(cyclohexylamine)	2.2

### 12.4. Mobility in soil

**Mobility in soil** No information available.

### 12.5. Results of PBT and vPvB assessment

**PBT and vPvB assessment** The product does not contain any substance(s) classified as PBT or vPvB above the threshold of declaration.

Chemical name	PBT and vPvB assessment
4,4'-methylenebis(cyclohexylamine)	The substance is not PBT / vPvB

### 12.6. Endocrine disrupting properties

**Endocrine disrupting properties** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7. Other adverse effects

No information available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.

## SECTION 14: Transport information

### IATA

14.1 UN number or ID number	UN2735
14.2 UN proper shipping name	Amines, liquid, corrosive, n.o.s.(CONTAINS 4,4'-methylenebis(cyclohexylamine))
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN2735, Amines, liquid, corrosive, n.o.s., 8, II
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	A3, A803
ERG Code	8L

### IMDG

14.1 UN number or ID number	UN2735
14.2 UN proper shipping name	Amines, liquid, corrosive, n.o.s.(CONTAINS 4,4'-methylenebis(cyclohexylamine))
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN2735, Amines, liquid, corrosive, n.o.s., 8, II
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	274
EmS-No	F-A, S-B
14.7 Maritime transport in bulk according to IMO instruments	No information available

### RID

14.1 UN number or ID number	UN2735
14.2 UN proper shipping name	Amines, liquid, corrosive, n.o.s.(CONTAINS 4,4'-methylenebis(cyclohexylamine))
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN2735, Amines, liquid, corrosive, n.o.s., 8, II
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	274
Classification code	C7

### ADR

14.1 UN number or ID number	UN2735
14.2 UN proper shipping name	Amines, liquid, corrosive, n.o.s.(CONTAINS 4,4'-methylenebis(cyclohexylamine))
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN2735, Amines, liquid, corrosive, n.o.s., 8, II, (E)
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	274

Classification code C7  
Tunnel restriction code (E)

## SECTION 15: Regulatory information

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

**Water hazard class (WGK)** strongly hazardous to water (WGK 3)

#### European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

#### Authorisations and/or restrictions on use:

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

#### Persistent Organic Pollutants

Not applicable

#### Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not applicable

#### International Inventories

<b>TSCA</b>	Contact supplier for inventory compliance status
<b>DSL/NDL</b>	Contact supplier for inventory compliance status
<b>EINECS/ELINCS</b>	Contact supplier for inventory compliance status
<b>ENCS</b>	Contact supplier for inventory compliance status
<b>IECSC</b>	Contact supplier for inventory compliance status
<b>KECL</b>	Contact supplier for inventory compliance status
<b>PICCS</b>	Contact supplier for inventory compliance status
<b>AIIC</b>	Contact supplier for inventory compliance status
<b>NZIoC</b>	Contact supplier for inventory compliance status

#### Legend:

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AIIC** - Australian Inventory of Industrial Chemicals  
**NZIoC** - New Zealand Inventory of Chemicals

### 15.2. Chemical safety assessment

Chemical Safety Report

No information available

## SECTION 16: Other information

### Key or legend to abbreviations and acronyms used in the safety data sheet

#### Full text of H-Statements referred to under section 3

H302 - Harmful if swallowed

H314 - Causes severe skin burns and eye damage

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H373 - May cause damage to organs through prolonged or repeated exposure

#### Legend

SVHC: Substances of Very High Concern for Authorisation:

#### Legend Section 8: Exposure controls/personal protection

TWA TWA (time-weighted average)

STEL

STEL (Short Term Exposure Limit)

Ceiling Maximum limit value

\*

Skin designation

+ Sensitisers

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

#### Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)

U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA\_RAC)

European Chemicals Agency (ECHA) (ECHA\_API)

EPA (Environmental Protection Agency)

Acute Exposure Guideline Level(s) (AEGL(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)  
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)  
NIOSH (National Institute for Occupational Safety and Health)  
National Library of Medicine's ChemID Plus (NLM CIP)  
National Library of Medicine's PubMed database (NLM PUBMED)  
National Toxicology Program (NTP)  
New Zealand's Chemical Classification and Information Database (CCID)  
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications  
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme  
Organisation for Economic Co-operation and Development Screening Information Data Set  
World Health Organization

Revision date 02/10/2023

**Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)**

**Disclaimer**

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.**

**End of Safety Data Sheet**