SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Safety data sheet according to Regulation (EC) 2020/878

Revision date 25/10/2023 **Revision Number** 1.54

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

1.1. Product identifier

Product Name Epoxy Resin ER1448, Part A

Product Code(s) ER1448A, EER1448RP250G, EER1448K5K, EER1448AB200K, ZE

Safety data sheet number 01696

Unique Formula Identifier (UFI) 3KP4-R09S-A006-XJYC

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

Manufacturer

ELECTROLUBE
MacDermid Alpha Electronics Solutions
ASHBY PARK, COALFIELD WAY,
ASHBY DE LA ZOUCH,
LEICESTERSHIRE LE65 1JR
UNITED KINGDOM

+44 (0)1530 419600
+44 (0)1530 416640
info@electrolube.com

Supplier

HK WENTWORTH LIMITED
32 RUE DE TOURNENFILS
91540 MENNECY
FRANCE

+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)

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

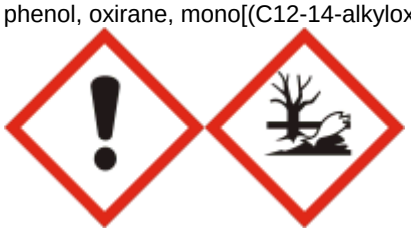
Classification according to

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

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

2.2. Label elements

Contains Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700), Oxirane, (chloromethyl)-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy(methyl-1,2-ethanediyl)), 1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane, 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 and eye/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.
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. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) 25068-38-6	30-60	01-2119456619-26-0000	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%	-	-
Oxirane, (chloromethyl)-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy(methyl-1,2-ethanediyl)) 9072-62-2	10-30	No data available	618-635-2	Aquatic Chronic 3 (H412) Skin Sens. 1 (H317) Eye Irrit. 2 (H319) Skin Irrit. 2 (H315)	-	-	-
1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane 17557-23-2	10-30	No data available	241-536-7	Skin Sens. 1 (H317) Skin Irrit. 2 (H315)	-	-	-
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol 9003-36-5	1-5	01-2119454392-40-0000	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	01-2119485289-22-0000	271-846-8	Skin Sens. 1 (H317) Skin Irrit. 2 (H315)	-	-	-
Cyclohexanone 108-94-1	<0.1	01-2119453616-35-0000	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
1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane 17557-23-2	4500	2000	No data available	No data available	No data available
formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol 9003-36-5	2000	No data available	No data available	No data available	No data available
oxirane, mono[(C12-14-alkyloxy)	17100	3987	No data available	No data available	No data available

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
methyl] derivs. 68609-97-2					
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

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact 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.

Skin contact 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.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.

Self-protection of the first aider 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

Symptoms Itching. Rashes. Hives. May cause redness and tearing of the eyes. Burning sensation.

Effects of Exposure No information available.

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

Note to doctors May cause sensitisation in susceptible persons. Treat symptomatically.

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 Product is or contains a sensitiser. May cause sensitisation by skin contact.

chemical

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	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.

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. 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.
General hygiene considerations	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

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place.

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.

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/m³	-
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ *	TWA: 5 ppm TWA: 20 mg/m³ STEL 20 ppm STEL 80 mg/m³ H*	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ D*	STEL: 20 ppm STEL: 81.6 mg/m³ TWA: 10 ppm TWA: 40.8 mg/m³ K*	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ *
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich 68515-49-1	-	-	TWA: 3 mg/m³ STEL: 6 mg/m³ esters, not specified elsewhere in the list	TWA: 3 mg/m³ STEL: 5 mg/m³	-
Cyclohexanone 108-94-1	STEL: 20 ppm STEL: 81.6 mg/m³ TWA: 10 ppm TWA: 40.8 mg/m³	TWA: 40 mg/m³ Ceiling: 80 mg/m³ D*	TWA: 10 ppm TWA: 41 mg/m³ H* STEL: 81.6 mg/m³ STEL: 20 ppm	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ A*	TWA: 10 ppm TWA: 41 mg/m³ STEL: 20 ppm STEL: 82 mg/m³ iho*
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³	TWA: 20 ppm TWA: 80 mg/m³ H*	*	TWA: 50 ppm TWA: 200 mg/m³ STEL: 100 ppm STEL: 400 mg/m³ *	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ b*
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich 68515-49-1	-	-	-	-	STEL: 5 mg/m³ TWA: 3 mg/m³
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ Sk*	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ cute*	TWA: 20 ppm TWA: 80 mg/m³ STEL: 50 ppm STEL: 201 mg/m³ cute*	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³ Ada*	STEL: 20 ppm STEL: 81.6 mg/m³ TWA: 10 ppm TWA: 40.8 mg/m³ O*
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Cyclohexanone 108-94-1	STEL: 20 ppm STEL: 81.6 mg/m³ TWA: 10 ppm TWA: 40.8 mg/m³ Peau*	STEL: 20 ppm STEL: 81.6 mg/m³ skin* TWA: 10 ppm TWA: 40.8 mg/m³	STEL: 12.3 ppm STEL: 50 mg/m³ H*	TWA: 10 ppm TWA: 40 mg/m³ STEL: 20 ppm STEL: 80 mg/m³ H*	STEL: 80 mg/m³ TWA: 40 mg/m³ skóra*
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Cyclohexanone 108-94-1	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³	TWA: 10 ppm TWA: 41 mg/m³ K* Ceiling: 82 mg/m³	TWA: 10 ppm TWA: 40.8 mg/m³ STEL: 20 ppm STEL: 81.6 mg/m³	TWA: 10 ppm TWA: 41 mg/m³ STEL: 20 ppm STEL: 82 mg/m³

	Cutânea*	P*		K*	vía dérmica*
Chemical name	Sweden		Switzerland	United Kingdom	
1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich 68515-49-1	NGV: 3 mg/m³		-	-	
Cyclohexanone 108-94-1	Bindande KGV: 20 ppm Bindande KGV: 81 mg/m³ NGV: 10 ppm NGV: 41 mg/m³ H*		TWA: 25 ppm TWA: 100 mg/m³ STEL: 50 ppm STEL: 200 mg/m³ H*	TWA: 10 ppm TWA: 41 mg/m³ STEL: 20 ppm STEL: 82 mg/m³ Sk*	

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-Cyclohexanodiol (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 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))	2 mmol/mol creatinine - urine (Cyclohexanol) - post shift

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich 68515-49-1	-	41.67 mg/kg bw/day [4] [6]	5.29 mg/m³ [4] [6]
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	-	1 mg/kg bw/day [4] [6]	3.6 mg/m³ [4] [6]
Cyclohexanone 108-94-1	-	4 mg/kg bw/day [4] [6] 4 mg/kg bw/day [4] [7]	40 mg/m³ [4] [6] 80 mg/m³ [4] [7] 40 mg/m³ [5] [6] 80 mg/m³ [5] [7]

Derived No Effect Level (DNEL) - General Public .

Chemical name	Oral	Dermal	Inhalation
1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich 68515-49-1	0.75 mg/kg bw/day [4] [6]	-	1.3 mg/m³ [4] [6]
oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	0.5 mg/kg bw/day [4] [6]	-	0.87 mg/m³ [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/m³ [4] [6] 20 mg/m³ [4] [7] 20 mg/m³ [5] [6] 40 mg/m³ [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	-	-
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane 2530-83-8	0.45 mg/L	0.45 mg/L	0.045 mg/L	-	-
Cyclohexanone 108-94-1	0.0329 mg/L	0.329 mg/L	0.00329 mg/L	-	-

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	-
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane 2530-83-8	1.6 mg/kg sediment dw	0.16 mg/kg sediment dw	8.2 mg/L	0.063 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

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Hand protection Wear suitable gloves. Impervious gloves.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.

Environmental exposure controls No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Liquid
Appearance Liquid

Colour	black
Odour	No information available.
Odour threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	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	200 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	No data available	None known
Bulk density	1.09 kg/l	
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.
Oxidising properties	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.

10.2. Chemical stability

Stability Stable under normal conditions.

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.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials Strong acids. Strong bases. Strong oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

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

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.

Skin contact 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.

Ingestion 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

ATEmix (oral)	9,437.00 mg/kg
ATEmix (dermal)	3,699.80 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
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)	= 11400 mg/kg (Rat)	-	-
1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane	= 4500 mg/kg (Rat)	> 2000 mg/kg (Rat)	-
formaldehyde, oligomeric	> 2 g/kg (Rat)	-	-

reaction products with 1-chloro-2,3-epoxypropane and phenol			
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.

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

Respiratory or skin sensitisation 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 Based on available data, the classification criteria are not met.

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 Toxic to aquatic life with long lasting effects. Harmful to aquatic life.

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 ≤ 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 substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
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	A97, A158, A197
ERG Code	9L

IMDG

14.1 UN number or ID number	UN3082
14.2 UN proper shipping name	Environmentally hazardous substances, liquid, n.o.s.(Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
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 substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
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 substances, liquid, n.o.s. (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
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	(-)

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.	-
1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane - 17557-23-2	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

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

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 25/10/2023

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

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Safety data sheet according to Regulation (EC) 2020/878

Revision date 25/10/2023 **Revision Number** 1.74

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

1.1. Product identifier

Product Name Epoxy Resin ER1448, Part B

Product Code(s) ER1448B, EER1448RP250G, EER1448K5K, EER1448BB200K, ZE

Safety data sheet number 00730

Unique Formula Identifier (UFI) QN02-T0J9-F004-XT21

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

Manufacturer

ELECTROLUBE
MacDermid Alpha Electronics Solutions
ASHBY PARK, COALFIELD WAY,
ASHBY DE LA ZOUCH,
LEICESTERSHIRE LE65 1JR
UNITED KINGDOM

+44 (0)1530 419600
+44 (0)1530 416640
info@electrolube.com

Supplier

HK WENTWORTH LIMITED
32 RUE DE TOURNENFILS
91540 MENNECY
FRANCE

+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)

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]

Acute toxicity - Oral	Category 4 - (H302)
Skin corrosion/irritation	Category 1 Sub-category B - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)
Skin sensitisation	Category 1 - (H317)
Chronic aquatic toxicity	Category 2 - (H411)

2.2. Label elements

Contains Fatty acids, tall-oil, reaction products with tetraethylenepentamine, Phenol, styrenated, 2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine



Signal word
Danger

Hazard statements
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)
P273 - Avoid release to the environment.
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].
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

		number	Index No)	to Regulation (EC) No. 1272/2008 [CLP]	concentration limit (SCL)		(long-term)
Fatty acids, tall-oil, reaction products with tetraethylenepentamine 68953-36-6	30-60	No data available	273-201-6	Aquatic Chronic 2 (H411) Skin Sens. 1 (H317)	-	-	-
Phenol, styrenated 61788-44-1	10-30	01-2119980970-27-0000	262-975-0	Aquatic Chronic 2 (H411) Skin Sens. 1 (H317) Skin Irrit. 2 (H315)	-	-	-
2-Piperazin-1-ylethylamine 140-31-8	10-30	01-2119471486-30-0003	205-411-0	Aquatic Chronic 3 (H412) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Acute Tox. 4 (H302) Acute Tox. 4 (H312) Eye Dam. 1 (H318)	-	-	-
3,6,9-Triazaundecamethylenediamine 112-57-2	1-5	No data available	203-986-2	Aquatic Chronic 2 (H411) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Acute Tox. 4 (H302) Acute Tox. 4 (H312) 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
Phenol, styrenated 61788-44-1	2100	7940	No data available	No data available	No data available
2-Piperazin-1-ylethylamine 140-31-8	2097.2	866	No data available	No data available	No data available
3,6,9-Triazaundecamethylenediamine 112-57-2	3990	655.38	No data available	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

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation 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.
Eye contact	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.
Skin contact	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.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Wear personal protective clothing (see section 8). Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

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

Symptoms	Burning sensation. Itching. Rashes. Hives.
Effects of Exposure	No information available.

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

Note to doctors	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.

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 Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. 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. Store locked up. Protect from moisture. 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

Chemical name	Oral	Dermal	Inhalation
2-Piperazin-1-ylethylamine 140-31-8	-	3.33 mg/kg bw/day [4] [6]	10.6 mg/m³ [4] [6] 10.6 mg/m³ [4] [7] 15 µg/m³ [5] [6] 80 mg/m³ [5] [7]
Phenol, styrenated 61788-44-1	-	21 mg/kg bw/day [4] [6]	74 mg/m³ [4] [6]

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
Phenol, styrenated 61788-44-1	7.5 mg/kg bw/day [4] [6]	-	13.1 mg/m³ [4] [6]

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
2-Piperazin-1-ylethylamine 140-31-8	0.058 mg/L	0.58 mg/L	0.0058 mg/L	-	-
Phenol, styrenated 61788-44-1	4 µg/L	46 µg/L	0.4 µg/L	4.6 µg/L	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
2-Piperazin-1-ylethylamine 140-31-8	215 mg/kg sediment dw	21.5 mg/kg sediment dw	250 mg/L	1 mg/kg soil dw	-
Phenol, styrenated 61788-44-1	0.248 mg/kg sediment dw	24.8 µg/kg sediment dw	36.2 mg/L	47.3 µg/kg soil dw	-

8.2. Exposure controls

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection	Tight sealing safety goggles. Face protection shield.
Hand protection	Wear suitable gloves. Impervious gloves.
Skin and body protection	Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.
Respiratory protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
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.
Environmental exposure controls	No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Colour	Dark amber
Odour	Amines.
Odour threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	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	300 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	No data available	None known
Bulk density	0.95 kg/l	
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.
Oxidising properties	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.

10.2. Chemical stability

Stability Stable under normal conditions.

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.

10.4. Conditions to avoid

Conditions to avoid Exposure to air or moisture over prolonged periods.

10.5. Incompatible materials

Incompatible materials Acids. Bases. Oxidising agent.

10.6. Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

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

Inhalation	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.
Eye contact	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.

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. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.

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)	6,055.60 mg/kg
ATEmix (dermal)	13,322.20 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
Phenol, styrenated	2100 - 6700 mg/kg (Rat)	> 7940 mg/kg (Rabbit)	> 2.5 mg/L (Rat) 6 h
2-Piperazin-1-ylethylamine	= 2140 µL/kg (Rat)	= 866 mg/kg (Rabbit)	-
3,6,9-Triazaundecamethylenediamine	= 3990 mg/kg (Rat)	= 660 µL/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 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 Based on available data, the classification criteria are not met.

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 Toxic to aquatic life with long lasting effects. Harmful to aquatic life.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
2-Piperazin-1-ylethylamine	EC50: =495mg/L (72h, Pseudokirchneriella subcapitata)	LC50: 1950 - 2460mg/L (96h, Pimephales promelas) LC50: >1000mg/L (96h, Poecilia reticulata) LC50: >=100mg/L (96h, Oncorhynchus mykiss)	-	EC50: =32mg/L (48h, Daphnia magna)
3,6,9-Triazaundecamethylenediamine	EC50: =2.1mg/L (72h, Pseudokirchneriella subcapitata)	LC50: =420mg/L (96h, Poecilia reticulata)	-	EC50: =24.1mg/L (48h, Daphnia magna)

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
Phenol, styrenated	3.13
2-Piperazin-1-ylethylamine	-1.48
3,6,9-Triazaundecamethylenediamine	1

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
Phenol, styrenated	The substance is not PBT / vPvB
2-Piperazin-1-ylethylamine	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 UN1760
14.2 UN proper shipping name Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine)
14.3 Transport hazard class(es) 8
14.4 Packing group II
Description UN1760, Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine), 8, II
14.5 Environmental hazards Yes
14.6 Special precautions for user
Special Provisions A3, A803
ERG Code 8L

IMDG

14.1 UN number or ID number UN1760
14.2 UN proper shipping name Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine)
14.3 Transport hazard class(es) 8
14.4 Packing group II
Description UN1760, Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine), 8, II, Marine pollutant
14.5 Environmental hazards Yes
14.6 Special precautions for user
Special Provisions 274
EmS-No F-A, S-B
14.7 Maritime transport in bulk No information available

according to IMO instruments

RID

14.1 UN number or ID number	UN1760
14.2 UN proper shipping name	Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine)
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN1760, Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine), 8, II, Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	274
Classification code	C9

ADR

14.1 UN number or ID number	UN1760
14.2 UN proper shipping name	Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine)
14.3 Transport hazard class(es)	8
14.4 Packing group	II
Description	UN1760, Corrosive liquid, n.o.s. (2-Piperazin-1-ylethylamine, 3,6,9-Triazaundecamethylenediamine), 8, II, (E), Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	274
Classification code	C9
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
3,6,9-Triazaundecamethylenediamine - 112-57-2	RG 49,RG 49bis

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
2-Piperazin-1-ylethylamine - 140-31-8	Use restricted. See item 75.	-
3,6,9-Triazaundecamethylenediamine - 112-57-2	Use restricted. See item 75.	-

Persistent Organic Pollutants

Not applicable

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

Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECL	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	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
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H411 - Toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

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 25/10/2023

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)
Disclaimer
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End of Safety Data Sheet