

SAFETY DATA SHEET

Canusa Liquid Epoxy Type E-HB - Cure

Section 1. Identification

Product identifier : Canusa Liquid Epoxy Type E-HB - Cure
Product code : Not available.
Other means of identification : Canusa Liquid Epoxy Type E-HB - Cure, Liquid Epoxy Type E-HB - Cure

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Industrial application of coatings and inks by spraying Industrial application of coatings and inks by other than spraying	
Uses advised against	Reason
Consumer	-

Supplier's details : SFL Canusa Canada Ltd., 455 West Airport Road, Huntsville, ON, P1H 1Y7, Canada, Tel.: (+1) 705-789-1787
Seal For Life India Private Ltd., Plot17, GIDC Savli, Vadodara, Gujarat, Baroda, India - 391775, Tel.: +91 266 726 4721
SFL Canusa Middle East Pipeline Products Trading and Services LLC, Address: Plot # 37-WR43, Sector no.: ICAD III, Musaffah South, Abu Dhabi, United Arab Emirates, Tel: +971 2 204 9800
Seal For Life Industries, 10010 Cypress Creek Parkway Houston, TX 77070, USA, Tel.: +1 713-999-5090

Distributor / Importer :

Emergency telephone number (with hours of operation) : +1 705-789-1787 (CA: 8:00 - 17:00)
+91 266 726 4721 (IN: 08:00 - 17:00)
+971 2 204 9800 (UAE: 08:00 - 17:00)
+1 713-999-5090 (US: 8:00-17:00)

For emergencies only, call CHEMTREC (24 hours): In USA / Canada 1-800-424-9300; Outside USA +1 703-741-5970

Section 2. Hazard identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (dermal) - Category 4
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1A
TOXIC TO REPRODUCTION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazard identification

- Hazard statements** : Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause respiratory irritation.
May damage fertility or the unborn child.
- Precautionary statements**
- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
- Response** : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse. IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
- Storage** : Store locked up. Store in a well-ventilated place. Keep container tightly closed.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Supplemental label elements** : Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 42.6%
Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 43.6%
Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 91.8%

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Canusa Liquid Epoxy Type E-HB - Cure, Liquid Epoxy Type E-HB - Cure

Ingredient name	Synonyms	% (w/w)	CAS number
1-Piperazine ethanamine	1-Piperazineethanamine; 1-(2-Aminoethyl)piperazine; N-(Aminoethyl)piperazine; 2-(1-Piperazinyl) ethylamine; Piperazine, 1-(2-aminoethyl)-; 1-(2-AMINOETHYL)-PIPERAZINE; N-AMINOETHYLPIPERAZINE; 1-(2-AMINOETHYL)PIPERAZIN; 2-(Piperazin-1-yl)ethylamine; 1-Aminoethylpiperazine; PIPERAZINE, N-AMINOETHYL-	≥30 - ≤60	140-31-8
Bisphenol A	4,4'-isopropylidenediphenol; 4,4'-isopropylidenedi-phenol; Phenol, 4,4'-(1-methylethylidene)bis-; 2,2-Bis(4-hydroxyphenyl)propane; 4,4'-(1-Methylethylidene)bis[phenol; diphenylolpropane; BPA; Phenol, 4,4'-isopropylidenedi-; 4,4'-(propane-2,2-diyl)diphenol; 4,4'-isopropylidenediphenol; BPA; 4,4'-	≥10 - ≤30	80-05-7

Section 3. Composition/information on ingredients

	(1-Methylethylidene)bisphenol		
4-nonylphenol, branched	Phenol, 4-nonyl-, branched; Branched 4-nonylphenol (mixed isomers); Nonylphenol, 4-branched; N-NONYLPHENOL; Nonylphenol; C9- Branched alkyl phenol; Branched p-nonylphenol; 4-Nonylphenol (branched); Monoalkyl (C3-9)phenol; C9 branched alkyl phenol; Branched 4-nonylphenol	≥10 - ≤30	84852-15-3
benzyl dimethylamine	Benzenemethanamine, N,N-dimethyl- ; Benzylamine, N,N-dimethyl-; N,N-Dimethylbenzylamine; N-(Phenylmethyl)dimethylamine; Benzyl-N,N-dimethylamine; Dimethylbenzylamine; N-Benzyl dimethylamine; N,N-Dimethylbenzenemethanamine; N,N-dialkyl(C1-4) benzylamine; Benzylmethylamine; BDMA	≥5 - ≤10	103-83-3
N-(3-(trimethoxysilyl)propyl) ethylenediamine	1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-; 1,2-Ethanediamine, N-[3-(trimethoxysilyl)propyl]-; [3-(2-Aminoethyl)amino]; 1,2-Ethanediamine, N-(3-(trimethoxysilyl)propyl)-; 3-(2-aminoethylamino) propyltrimethoxysilane; 2-aminoethyl (3-trimethoxysilylpropyl)amine; Ethylenediamine, N-(3-(trimethoxysilyl)propyl)-; (trimethoxysilylpropyl) ethylenediamine; 1,2-Ethanediamine, N-{3-(trimethoxysilyl)propyl}-; 3-(2-Aminoethylamino) propyltrimethoxysilane; Dehydrochlorination reaction products of 3-[(2-aminoethyl)amino] propyltrimethoxysilane and 3-chloropropyltrimethoxysilane; N1-[3-(Trimethoxysilyl)prop-1-yl]ethane-1,2-diamine	≥1 - ≤5	1760-24-3
amines, polyethylenepoly-	HEPA; Polyethylenepolyamine; Crude polyamine bottoms; Polyethylene-polyamines; POLYETHYLENEPOLYAMINES	≥1 - ≤5	68131-73-7
Benzyl alcohol	Benzenemethanol; .alpha.-Hydroxytoluene; Phenylcarbinol; Phenylmethanol; E 1519; α-hydroxytoluene; Phenylmethyl alcohol; toluenol, alpha-; (hydroxymethyl)benzene; BENZENECARBINOL; alpha-Hydroxytoluene	≥1 - ≤5	100-51-6
3,6,9,12-tetraazatetradecamethylenediamine	pentachylenhexamine; 3,6,9,12-tetraazatetradecamethylenediamine; 3,6,9,12-Tetraazatetradecane-	≥1 - ≤5	4067-16-7

Section 3. Composition/information on ingredients

	1,14-diamine; pentaethylenehexamine; 3,6,9,12-Tetraazatetradecane- 1,14-diyl diamine; Alkylated (or alkenylated) (C 1-24) or unmodified polyalkylenepolyamine; 3,6,9-Triazaundecamethylenediamine		
Tetraethylenepentamine	tetraethylenepentamine; 1,2-Ethanediamine, N1- (2-aminoethyl)-N2-[2-[(2-aminoethyl) amino]ethyl]-; 1,2-Ethanediamine, N- (2-aminoethyl)-N'-[2-[(2-aminoethyl) amino]ethyl]-; 1,2-Ethanediamine, N- (2-aminoethyl)-N'-(2-((2-aminoethyl) amino)ethyl)-; 3,6,9-Triazaundecane- 1,11-diamine and preparations containing it; 3,6,9-Triazaundecane- 1,11-diamine; Tetrene; 1,11-Diamino- 3,6,9-triazaundecane; 3,6,9-Triazaundecane- 1,11-diyl diamine; TEPA; Alkylated (or alkenylated) (C 1-24) or unmodified polyalkylenepolyamine	≥0.1 - ≤1	112-57-2
2-(2-aminoethylamino)ethanol	(AEEA); Ethanol, 2-[(2-aminoethyl) amino]-; N-(Aminoethyl) ethanolamine; N- 2-hydroxyethylethylenediamine; N- (2-aminoethyl)ethanolamine; Ethanol, 2-((2-aminoethyl)amino)-; (2-AMINOETHYL) ETHANOLAMINE; AMINOETHYLETHANOLAMINE; 2-((2-AMINOETHYL)AMINO)ETHANOL; N-(2-Hydroxyethyl)ethylenediamine; AEEA	≥0.1 - ≤1	111-41-1
Diethylenetriamine	diethylenetriamine; 2,2'-iminodi (ethylamine); 1,2-Ethanediamine, N1- (2-aminoethyl)-; DETA; 1,2-Ethanediamine, N-(2-aminoethyl) -; N-(2-Aminoethyl) -1,2-ethanediamine; 2,2'- Diaminodiethylamine; bis (2-Aminoethyl)amine; 1,4,7-Tri-(aza)- heptane; di(2-aminoethyl)amine; 1,5-DIAMINO-3-AZAPENTANE	≥0.1 - ≤1	111-40-0

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Harmful if inhaled. May cause respiratory irritation.
- Skin contact** : Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Section 4. First-aid measures

- Ingestion** : Adverse symptoms may include the following:
 stomach pains
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 nitrogen oxides
 metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Benzyl alcohol	OARS WEEL (United States, 4/2022). TWA: 10 ppm 8 hours.
Tetraethylenepentamine	OARS WEEL (United States, 1/2021). Absorbed through skin. Skin sensitizer. TWA: 5 mg/m ³ 8 hours.
Diethylenetriamine	CA Alberta Provincial (Canada, 6/2018). Absorbed through skin. 8 hrs OEL: 4.2 mg/m ³ 8 hours. 8 hrs OEL: 1 ppm 8 hours. CA British Columbia Provincial (Canada, 3/2022). Absorbed through skin. TWA: 1 ppm 8 hours. CA Ontario Provincial (Canada, 6/2019). Absorbed through skin. TWA: 1 ppm 8 hours.

Section 8. Exposure controls/personal protection

**CA Quebec Provincial (Canada, 6/2021).
Absorbed through skin.**

TWAEV: 1 ppm 8 hours.

TWAEV: 4.2 mg/m³ 8 hours.

**CA Saskatchewan Provincial (Canada,
7/2013). Absorbed through skin.**

STEL: 2 ppm 15 minutes.

TWA: 1 ppm 8 hours.

Biological exposure indices

No exposure indices known.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state	: Liquid. [Viscous liquid.]
Color	: Light blue-green.
Odor	: Ammoniacal.
Odor threshold	: Not available.
pH	: Not applicable.
Melting point/freezing point	: Not available.
Boiling point, initial boiling point, and boiling range	: Not available.
Flash point	:

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
Methyl alcohol	9.7	49.5	Abel-Pensky			
1,2-Diaminoethane	38	100.4	DIN 51755			
benzyl dimethylamine	57	134.6	EU A.9			
Diethylenetriamine				96.7	206.1	ISO 2719
N-(3-(trimethoxysilyl)propyl) ethylenediamine	98	208.4				
1-Piperazine ethanamine				99	210.2	ISO 2719
Benzyl alcohol	100.56	213				
Poly[oxy(methyl-1,2-ethanediy)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-	128	262.4	ISO 2719			
2-(2-aminoethylamino)ethanol	132	269.6				
2-Propenoic acid, 2-ethylhexylester, reaction products with ethylenediamine- ethylenimine polymer, compds. with polyethylene- polypropylene glycol mono- butyl phosphate	135	275	Pensky-Martens			
Triethylenetetramine	143	289.4				
4-nonylphenol, branched	154	309.2	ISO 2719			
Tetraethylenepentamine				163	325.4	
amines, polyethylenepoly-	197.1	386.8	Pensky-Martens			
Bisphenol A	227	440.6				

Flammability	: Not available.
Lower and upper explosion limit/flammability limit	: Not available.
Vapor pressure	: Not applicable.
Relative vapor density	: Not available.
Relative density	: 1.07
Solubility in water	: Not available.
Miscible with water	: No.
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not applicable.

Section 9. Physical and chemical properties and safety characteristics

Decomposition temperature : Not available.
Viscosity : Kinematic: 2200 mm²/s (2200 cSt)

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1-Piperazine ethanamine	LD50 Dermal	Rabbit	886 mg/kg	-
Bisphenol A	LD50 Oral	Rat	1200 mg/kg	-
4-nonylphenol, branched	LD50 Oral	Rat	1300 mg/kg	-
benzyl dimethylamine	LD50 Dermal	Rabbit	1660 mg/kg	-
	LD50 Oral	Rat	265 mg/kg	-
N-(3-(trimethoxysilyl)propyl) ethylenediamine	LD50 Oral	Rat	2413 mg/kg	-
amines, polyethylenepoly-	LD50 Oral	Rat	2540 mg/kg	-
Benzyl alcohol	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	1230 mg/kg	-
3,6,9,12-tetra-azatetradecamethylenediamine	LD50 Oral	Rat	1600 mg/kg	-
Tetraethylenepentamine	LD50 Oral	Rat	3990 mg/kg	-
2-(2-aminoethylamino) ethanol	LD50 Dermal	Rat	2250 mg/kg	-
	LD50 Oral	Rat	3 g/kg	-
Diethylenetriamine	LD50 Dermal	Rabbit	1090 mg/kg	-
	LD50 Oral	Rat	1080 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1-Piperazine ethanamine	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Severe irritant	Rabbit	-	24 hours 5 mg	-
Bisphenol A	Eyes - Severe irritant	Rabbit	-	24 hours 250 ug	-
	Skin - Mild irritant	Rabbit	-	250 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500	-

Section 11. Toxicological information

4-nonylphenol, branched	Eyes - Severe irritant Skin - Severe irritant	Rabbit Rabbit	- -	mg 100 mg 24 hours 500	- -
benzyl dimethylamine	Eyes - Severe irritant Skin - Severe irritant	Rabbit Rabbit	- -	mg 5 mg 4 hours 500	- -
N-(3-(trimethoxysilyl)propyl) ethylenediamine	Eyes - Severe irritant	Rabbit	-	mg 15 mg	-
Benzyl alcohol	Skin - Mild irritant Skin - Mild irritant	Rabbit Man	- -	500 mg 48 hours 16	- -
	Skin - Moderate irritant Skin - Moderate irritant	Pig Rabbit	- -	mg 100 % 24 hours 100	- -
Tetraethylenepentamine	Eyes - Moderate irritant	Rabbit	-	mg 24 hours 100	-
	Eyes - Moderate irritant Skin - Severe irritant Skin - Severe irritant	Rabbit Rabbit Rabbit	- - -	5 mg 495 mg 24 hours 5	- - -
2-(2-aminoethylamino) ethanol	Eyes - Severe irritant	Rabbit	-	mg 50 mg	-
Diethylenetriamine	Skin - Mild irritant Skin - Moderate irritant	Rabbit Rabbit	- -	445 mg 500 mg	- -

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Bisphenol A	Category 3	-	Respiratory tract irritation
2-(2-aminoethylamino)ethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Section 11. Toxicological information

- Skin contact** : Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Reproductive toxicity** : May damage fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Canusa Liquid Epoxy Type E-HB - Cure	872.1	1023.0	N/A	15.1	N/A
1-Piperazine ethanamine	N/A	886	N/A	N/A	N/A
Bisphenol A	1200	N/A	N/A	N/A	N/A
4-nonylphenol, branched	1300	N/A	N/A	N/A	N/A
benzyl dimethylamine	265	1660	N/A	11	N/A
N-(3-(trimethoxysilyl)propyl)ethylenediamine	2413	N/A	N/A	N/A	N/A
amines, polyethylenepoly-	500	1100	N/A	N/A	N/A
Benzyl alcohol	1230	2000	N/A	N/A	N/A
3,6,9,12-tetra-azatetradecamethylenediamine	1600	N/A	N/A	N/A	N/A
Tetraethylenepentamine	3990	300	N/A	N/A	N/A
2-(2-aminoethylamino)ethanol	3000	2250	N/A	N/A	N/A
Diethylenetriamine	1080	1090	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1-Piperazine ethanamine Bisphenol A	Acute LC50 2190000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 1.506 mg/l Marine water	Algae - Prorocentrum minimum - Exponential growth phase	72 hours
4-nonylphenol, branched	Acute EC50 1000 µg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 7.3 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 50.4 µg/l Marine water	Crustaceans - Artemia sinica	48 hours
	Acute LC50 3.5 mg/l Marine water	Fish - Rivulus marmoratus - Embryo	96 hours
	Chronic NOEC 2 mg/l Fresh water	Algae - Chlorolobion braunii - Exponential growth phase	4 days
	Chronic NOEC 10 µg/l Marine water	Crustaceans - Tigriopus japonicus - Nauplii	21 days
	Chronic NOEC 30 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 0.2 µg/l Fresh water	Fish - Carassius auratus - Adult	90 days
	Acute EC50 0.03 mg/l Marine water	Algae - Skeletonema costatum	72 hours
	Acute EC50 0.027 mg/l Marine water	Algae - Skeletonema costatum	96 hours
benzyl dimethylamine Benzyl alcohol Diethylenetriamine	Acute EC50 0.044 mg/l	Crustaceans - Moina macrocopa	48 hours
	Acute LC50 17 µg/l Marine water	Fish - Pleuronectes americanus - Larvae	96 hours
	Chronic EC10 0.012 mg/l Marine water	Algae - Skeletonema costatum	96 hours
	Chronic NOEC 5 µg/l Fresh water	Crustaceans - Gammarus fossarum - Adult	21 days
	Chronic NOEC 7.4 µg/l Fresh water	Fish - Pimephales promelas - Embryo	33 days
benzyl dimethylamine Benzyl alcohol Diethylenetriamine	Acute LC50 37800 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute LC50 10000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute LC50 53500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1014000 µg/l Fresh water	Fish - Poecilia reticulata	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
1-Piperazine ethanamine	-1.48	-	low
Bisphenol A	3.4	20 to 67	low
4-nonylphenol, branched	5.4	740	high
benzyl dimethylamine	1.98	6.2 to 22	low
amines, polyethylenepoly-	-3.67	-	low
Benzyl alcohol	0.87	-	low
3,6,9,12-tetra-	-3.67	-	low
azatetradecamethylenediamine			
2-(2-aminoethylamino)	-1.46	<0.2	low
ethanol			
Diethylenetriamine	-5.58	2.8 to 6.3	low

Mobility in soil








Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	UN2735	UN2735	UN2735	UN2735
UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. (N-AMINOETHYLPIPERAZINE, Nonylphenol)	Amines, liquid, corrosive, n.o.s. (N-AMINOETHYLPIPERAZINE, Nonylphenol)	AMINES, LIQUID, CORROSIVE, N.O.S. (N-AMINOETHYLPIPERAZINE, Nonylphenol)	Amines, liquid, corrosive, n.o.s. (N-AMINOETHYLPIPERAZINE, Nonylphenol)
Transport hazard class(es)	8  	8  	8  	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

Section 14. Transport information

- TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.
Explosive Limit and Limited Quantity Index 5
Passenger Carrying Road or Rail Index 5
Special provisions 16
- DOT Classification** : This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.
Limited quantity Yes.
Packaging instruction Exceptions: 154. Non-bulk: 203. Bulk: 241.
Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
Special provisions IB3, T7, TP1, TP28
- IMDG** : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-A, S-B
Special provisions 223, 274
- IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 5 L. Packaging instructions: 852. Cargo Aircraft Only: 60 L. Packaging instructions: 856. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y841.
Special provisions A3, A803
- Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Canadian lists

- Canadian NPRI** : The following components are listed: bisphenol A; nonylphenol and its ethoxylates
- CEPA Toxic substances** : The following components are listed: phenol, 4,4' -(1-methylethylidene)bis-; nonylphenol and its ethoxylates

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

- Australia** : Not determined.
- Canada** : Not determined.
- China** : All components are listed or exempted.
- Eurasian Economic Union** : **Russian Federation inventory:** Not determined.

Section 15. Regulatory information

Japan	: Japan inventory (CSCL): Not determined. Japan inventory (ISHL): Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: Not determined.
Viet Nam	: All components are listed or exempted.

Section 16. Other information

History

Date of printing	: 5/12/2023
Date of issue/Date of revision	: 5/12/2023
Date of previous issue	: 5/12/2023
Version	: 2

Key to abbreviations	: ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals HPR = Hazardous Products Regulations IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available SGG = Segregation Group UN = United Nations
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Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (dermal) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN CORROSION - Category 1	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
SKIN SENSITIZATION - Category 1A	Calculation method
TOXIC TO REPRODUCTION - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method

References	: Not available.
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✔ Indicates information that has changed from previously issued version.

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