



Safety Data Sheet according to (EC) No 1907/2006 as amended

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LOCTITE EA 3422 DC50ML EN/DE

SDS No. : 178259
V003.0

Revision: 13.12.2023

printing date: 18.12.2023

Replaces version from: 08.03.2023

Kit/Multi-component Product

1. SDS No.418894 - LOCTITE EA 3422 A
2. SDS No.205945 - LOCTITE EA 3422 B



Safety Data Sheet according to (EC) No 1907/2006 as amended

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LOCTITE EA 3422 A

SDS No. : 418894
V003.0

Revision: 13.12.2023

printing date: 18.12.2023

Replaces version from: 12.12.2023

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

1.1. Product identifier

LOCTITE EA 3422 A

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

Intended use:
Epoxy adhesive

1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA
Henkelstr. 67
40589 Düsseldorf

Germany

Phone: +49 211 797 0

SDSinfo.Adhesive@henkel.com

For Safety Data Sheet updates please visit our website <https://mysds.henkel.com/index.html#/appSelection> or www.henkel-adhesives.com.

1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Skin irritation	Category 2
H315 Causes skin irritation.	
Serious eye irritation	Category 2
H319 Causes serious eye irritation.	
Skin sensitizer	Category 1
H317 May cause an allergic skin reaction.	
Chronic hazards to the aquatic environment	Category 2
H411 Toxic to aquatic life with long lasting effects.	

2.2. Label elements

Label elements (CLP):

Hazard pictogram:



Contains

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane

Bisphenol-F epichlorhydrin resin; MW<700

Signal word:	Warning
Hazard statement:	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 statement: Prevention	P273 Avoid release to the environment. P280 Wear protective gloves.
Precautionary statement: Response	P302+P352 IF ON SKIN: Wash with plenty of soap and water. P333+P313 If skin irritation or rash occurs: Get medical advice/attention. P337+P313 If eye irritation persists: Get medical advice/attention.

2.3. Other hazards

None if used properly.

Following substances are present in a concentration \geq the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration \geq the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

SECTION 3: Composition/information on ingredients

3.2. Mixtures**Declaration of the ingredients according to CLP (EC) No 1272/2008:**

Hazardous components CAS-No. EC Number REACH-Reg No.	Concentration	Classification	Specific Conc. Limits, M-factors and ATEs	Add. Information
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)bisoxirane 1675-54-3 01-2119456619-26	50- 100 %	Eye Irrit. 2, H319 Aquatic Chronic 2, H411 Skin Sens. 1, H317 Skin Irrit. 2, H315	Eye Irrit. 2; H319; C \geq 5 % Skin Irrit. 2; H315; C \geq 5 %	
Bisphenol-F epichlorhydrin resin; MW<700 ----- 01-2119454392-40	20- 40 %	Skin Irrit. 2, Dermal, H315 Skin Sens. 1, H317 Aquatic Chronic 2, H411		

If no ATE values are displayed, please refer to LD/LC50 values in Section 11.
For full text of the H - statements and other abbreviations see section 16 "Other information".

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:

Rinse with running water and soap.

Obtain medical attention if irritation persists.

Eye contact:

Rinse immediately with plenty of running water (for 10 minutes), seek medical attention from a specialist.

Ingestion:

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

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

SKIN: Redness, inflammation.

SKIN: Rash, Urticaria.

EYE: Irritation, conjunctivitis.

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

See section: Description of first aid measures

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

water, carbon dioxide, foam, powder

Extinguishing media which must not be used for safety reasons:

High pressure waterjet

5.2. Special hazards arising from the substance or mixture

In the event of a fire, carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x) can be released.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Additional information:

In case of fire, keep containers cool with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes.

Wear protective equipment.

Ensure adequate ventilation.

6.2. Environmental precautions

Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up

Dispose of contaminated material as waste according to Section 13.

For small spills wipe up with paper towel and place in container for disposal.

For large spills absorb onto inert absorbent material and place in sealed container for disposal.

6.4. Reference to other sections

See advice in section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid skin and eye contact.

See advice in section 8

Hygiene measures:

Wash hands before work breaks and after finishing work.

Do not eat, drink or smoke while working.

Good industrial hygiene practices should be observed.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, well-ventilated place.
Refer to Technical Data Sheet

7.3. Specific end use(s)

Epoxy adhesive

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Germany

None

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	aqua (freshwater)		0,006 mg/l				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Freshwater - intermittent		0,018 mg/l				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	aqua (marine water)		0,001 mg/l				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Marine water - intermittent		0,002 mg/l				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	sewage treatment plant (STP)		10 mg/l				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	sediment (freshwater)				0,341 mg/kg		
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	sediment (marine water)				0,034 mg/kg		
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Soil				0,065 mg/kg		
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	oral				11 mg/kg		
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Air						no hazard identified
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	aqua (freshwater)		0,003 mg/l				
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	aqua (marine water)		0,0003 mg/l				
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	sewage treatment plant (STP)		10 mg/l				
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	sediment (freshwater)				0,294 mg/kg		
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	sediment (marine water)				0,0294 mg/kg		
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	Soil				0,237		

(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----					mg/kg		
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	aqua (intermittent releases)		0,0254 mg/l				
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	Air						no hazard identified
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	Predator						no potential for bioaccumulation

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	inhalation	Long term exposure - systemic effects		4,93 mg/m ³	no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	dermal	Long term exposure - systemic effects		0,75 mg/kg	no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	inhalation	Long term exposure - systemic effects		0,87 mg/m ³	no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	dermal	Long term exposure - systemic effects		0,0893 mg/kg	no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	oral	Long term exposure - systemic effects		0,5 mg/kg	no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	inhalation	Long term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	inhalation	Acute/short term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	dermal	Long term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	Workers	dermal	Acute/short term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	inhalation	Long term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	inhalation	Acute/short term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	dermal	Long term exposure - local effects			no hazard identified
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3	General population	dermal	Acute/short term exposure - local effects			no hazard identified
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) -----	Workers	Inhalation	Long term exposure - systemic effects		29,39 mg/m ³	no hazard identified
Reaction product: bisphenol-F-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)	Workers	dermal	Long term exposure - systemic effects		104,15 mg/kg	no hazard identified

----- Reaction product: bisphenol-F- (epichlorhydrin); epoxy resin (number average molecular weight \leq 700) -----	Workers	dermal	Acute/short term exposure - local effects		0,0083 mg/cm ²	no hazard identified
Reaction product: bisphenol-F- (epichlorhydrin); epoxy resin (number average molecular weight \leq 700) -----	General population	Inhalation	Long term exposure - systemic effects		8,7 mg/m ³	no hazard identified
Reaction product: bisphenol-F- (epichlorhydrin); epoxy resin (number average molecular weight \leq 700) -----	General population	dermal	Long term exposure - systemic effects		62,5 mg/kg	no hazard identified
Reaction product: bisphenol-F- (epichlorhydrin); epoxy resin (number average molecular weight \leq 700) -----	General population	oral	Long term exposure - systemic effects		6,25 mg/kg	no hazard identified

Biological Exposure Indices:

None

8.2. Exposure controls:

Engineering controls:

Ensure good ventilation/extraction.

Respiratory protection:

Ensure adequate ventilation.

An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area

Filter type: A (EN 14387)

Hand protection:

Chemical-resistant protective gloves (EN 374).

Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):

nitrile rubber (NBR; \geq 0.4 mm thickness)

Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):

nitrile rubber (NBR; \geq 0.4 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:

Protective eye equipment should conform to EN166.

Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing.

Protective eye equipment should conform to EN166.

Skin protection:

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Wear suitable protective clothing.

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Delivery form	paste
Colour	white
Odor	characteristic
Physical state	liquid
Melting point	Not applicable, Product is a liquid
Solidification temperature	< 5 °C (< 41 °F)
Initial boiling point	> 250 °C (> 482 °F)
Flammability	The product is not flammable.
Explosive limits	Not applicable, The product is not flammable.
Flash point	> 200 °C (> 392 °F)
Auto-ignition temperature	Not applicable, The product is not flammable.
Decomposition temperature	Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use
pH	Not applicable, Product is non-soluble (in water).
Viscosity (kinematic) (40 °C (104 °F);)	> 20,5 mm ² /s
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	Insoluble
Partition coefficient: n-octanol/water	Not applicable
Vapour pressure (20 °C (68 °F))	Mixture < 700 mbar
Density (25 °C (77 °F))	1,16 g/cm ³ None
Relative vapour density: (20 °C)	> 1
Particle characteristics	Not applicable Product is a liquid

9.2. Other information

Other information not applicable for this product

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with strong oxidants.
Reaction with strong acids.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

See section reactivity

10.4. Conditions to avoid

Stable under normal conditions of storage and use.

10.5. Incompatible materials

See section reactivity.

10.6. Hazardous decomposition products

carbon oxides.

SECTION 11: Toxicological information

General toxicological information:

The mixture is classified based on the available hazard information for the ingredients as defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation (EC) No 1272/2008. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

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

Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	LD50	> 2.000 mg/kg	rat	OECD Guideline 420 (Acute Oral Toxicity)
Bisphenol-F epichlorhydrin resin; MW<700 -----	LD50	> 5.000 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)

Acute dermal toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	LD50	> 2.000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
Bisphenol-F epichlorhydrin resin; MW<700 -----	LD50	> 2.000 mg/kg	rat	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)

Acute inhalative toxicity:

No substance data available.
No data available.

Skin corrosion/irritation:

Causes skin irritation.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	not irritating	4 h	rabbit	not specified
Bisphenol-F epichlorhydrin resin; MW<700 -----	irritating	4 h	rabbit	equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

Causes serious eye irritation.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Bisphenol-F epichlorhydrin resin; MW<700 -----	not irritating		rabbit	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Species	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
Bisphenol-F epichlorhydrin resin; MW<700 -----	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)

Germ cell mutagenicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 472 (Genetic Toxicology: Escherichia coli, Reverse Mutation Assay)
Bisphenol-F epichlorhydrin resin; MW<700 -----	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	negative	oral: gavage		mouse	not specified
Bisphenol-F epichlorhydrin resin; MW<700 -----	negative	oral: gavage		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	negative	oral: gavage		rat	OECD Guideline 486 (Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo)

Carcinogenicity

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	not carcinogenic	dermal	2 y daily	mouse	male	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	not carcinogenic	oral: gavage	2 y daily	rat	male/female	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Reproductive toxicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	NOAEL P >= 50 mg/kg NOAEL F1 >= 750 mg/kg NOAEL F2 >= 750 mg/kg	Two generation study	oral: gavage	rat	OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)
Bisphenol-F epichlorhydrin resin; MW<700 -----	NOAEL P > 750 mg/kg NOAEL F1 750 mg/kg NOAEL F2 750 mg/kg	two-generation study	oral: gavage	rat	OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)

STOT-single exposure:

No data available.

STOT-repeated exposure:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane 1675-54-3	NOAEL 50 mg/kg	oral: gavage	14 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Bisphenol-F epichlorhydrin resin; MW<700 -----	NOAEL 250 mg/kg	oral: gavage	13 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)

Aspiration hazard:

No data available.

11.2 Information on other hazards

not applicable

SECTION 12: Ecological information

General ecological information:

Do not empty into drains / surface water / ground water.

12.1. Toxicity

Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	LC50	1,75 mg/l	96 h	Oncorhynchus mykiss	OECD Guideline 203 (Fish, Acute Toxicity Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	LC50	5,7 mg/l	96 h	Leuciscus idus	OECD Guideline 203 (Fish, Acute Toxicity Test)

Toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	EC50	1,7 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	EC50	2,55 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

Chronic toxicity (aquatic invertebrates):

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	NOEC	0,3 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	NOEC	0,3 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	EC50	> 11 mg/l	72 h	Scenedesmus capricornutum	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	NOEC	4,2 mg/l	72 h	Scenedesmus capricornutum	OECD Guideline 201 (Alga, Growth Inhibition Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	EC50	1,8 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)

Toxicity (microorganisms):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	IC50	> 100 mg/l	3 h	activated sludge, industrial	other guideline:
Bisphenol-F epichlorhydrin resin; MW<700 -----	IC50	> 100 mg/l	3 h	activated sludge, industrial	other guideline:

12.2. Persistence and degradability

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	not readily biodegradable.	aerobic	5 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
Bisphenol-F epichlorhydrin resin; MW<700 -----	not readily biodegradable.	aerobic	0 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)

12.3. Bioaccumulative potential

No substance data available.

No data available.

12.4. Mobility in soil

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	LogPow	Temperature	Method
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	3,242	25 °C	EU Method A.8 (Partition Coefficient)
Bisphenol-F epichlorhydrin resin; MW<700 -----	2,7 - 3,6		OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)

12.5. Results of PBT and vPvB assessment

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	PBT / vPvB
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Bisphenol-F epichlorhydrin resin; MW<700 -----	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

12.6. Endocrine disrupting properties

not applicable

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Product disposal:

Do not empty into drains / surface water / ground water.

Dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:

After use, tubes, cartons and bottles containing residual product should be disposed of as chemically contaminated waste in an authorised legal land fill site or incinerated.

Waste code

08 04 09* waste adhesives and sealants containing organic solvents and other dangerous substances

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

SECTION 14: Transport information

14.1. UN number or ID number

ADR	3082
RID	3082
ADN	3082
IMDG	3082
IATA	3082

14.2. UN proper shipping name

ADR	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)
RID	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)
ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)
IATA	Environmentally hazardous substance, liquid, n.o.s. (Epoxy resin)

14.3. Transport hazard class(es)

ADR	9
RID	9
ADN	9
IMDG	9
IATA	9

14.4. Packing group

ADR	III
RID	III
ADN	III
IMDG	III
IATA	III

14.5. Environmental hazards

ADR	Environmentally Hazardous
RID	Environmentally Hazardous
ADN	Environmentally Hazardous
IMDG	Marine Pollutant
IATA	Environmentally Hazardous

14.6. Special precautions for user

ADR	not applicable Tunnelcode:
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

The transport classifications in this section apply generally to packed and bulk goods alike. For containers with a net volume of no more than 5 L for liquid substances or a net mass of no more than 5 kg for solid substances per individual or inner package, the exemptions SP 375 (ADR), A197 (IATA), 2.10.2.7 (IMDG) may be applied, which can result in a deviation from the transport classification for packed goods.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

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

Ozone Depleting Substance (ODS) (Regulation (EC) No 1005/2009):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable
VOC content (2010/75/EC)	< 3 %

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

National regulations/information (Germany):

WGK: WGK 2: significantly water endangering (Ordinance on facilities for handling substances that are hazardous to water (AwSV))
Classification according to AwSV, Annex 1 (5.2)

Storage class according to TRGS 510: 10

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

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.

ED:	Substance identified as having endocrine disrupting properties
EU OEL:	Substance with a Union workplace exposure limit
EU EXPLD 1:	Substance listed in Annex I, Reg (EC) No. 2019/1148
EU EXPLD 2:	Substance listed in Annex II, Reg (EC) No. 2019/1148
SVHC:	Substance of very high concern (REACH Candidate List)
PBT:	Substance fulfilling persistent, bioaccumulative and toxic criteria
PBT/vPvB:	Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria
vPvB:	Substance fulfilling very persistent and very bioaccumulative criteria

Further information:

This Safety Data Sheet has been produced for sales from Henkel to parties purchasing from Henkel, is based on Regulation (EC) No 1907/2006 and provides information in accordance with applicable regulations of the European Union only. In that respect, no statement, warranty or representation of any kind is given as to compliance with any statutory laws or regulations of any other jurisdiction or territory other than the European Union. When exporting to territories other than the European Union, please consult with the respective Safety Data Sheet of the concerned territory to ensure compliance or liaise with Henkel's Product Safety and Regulatory Affairs Department (SDSinfo.Adhesive@henkel.com) prior to export to other territories than the European Union.

This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

Dear Customer,
Henkel is committed to creating a sustainable future by promoting opportunities along the entire value chain. If you would like to contribute by switching from a paper to the electronic version of SDS, please contact the local Customer Service representative. We recommend to use a non-personal email address (e.g. SDS@your_company.com).

Relevant changes in this safety data sheet are indicated by vertical lines at the left margin in the body of this document. Corresponding text is displayed in a different color on shadowed fields.



Safety Data Sheet according to (EC) No 1907/2006 as amended Page 1 of 27

LOCTITE EA 3422 B

SDS No. : 205945
V003.0

Revision: 13.12.2023

printing date: 18.12.2023

Replaces version from: 12.12.2023

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

1.1. Product identifier

LOCTITE EA 3422 B

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

Intended use:

Epoxy adhesive

1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA

Henkelstr. 67

40589 Düsseldorf

Germany

Phone: +49 211 797 0

SDSinfo.Adhesive@henkel.com

For Safety Data Sheet updates please visit our website <https://mysds.henkel.com/index.html#/appSelection> or www.henkel-adhesives.com.

1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Acute toxicity	Category 4
H302 Harmful if swallowed.	
Route of Exposure: Oral	
Skin corrosion	Sub-category 1B
H314 Causes severe skin burns and eye damage.	
Serious eye damage	Category 1
H318 Causes serious eye damage.	
Skin sensitizer	Category 1
H317 May cause an allergic skin reaction.	
Acute hazards to the aquatic environment	Category 1
H400 Very toxic to aquatic life.	
Chronic hazards to the aquatic environment	Category 1
H410 Very toxic to aquatic life with long lasting effects.	

2.2. Label elements

Label elements (CLP):

Hazard pictogram:**Contains**

Pentaerythritol-PO-mercaptoglycerol

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine

Fatty acids C18 unsat, reaction products with tetraethylenepentamine

N-Aminopropylmorpholine

Amines, polyethylenepoly-, tetraethylenepentamine fraction

Ethylenediamine

Signal word:

Danger

Hazard statement:

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statement:
Prevention**

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

P273 Avoid release to the environment.

**Precautionary statement:
Response**

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.

P310 Immediately call a POISON CENTER or doctor.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

2.3. Other hazards

None if used properly.

Following substances are present in a concentration \geq the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration \geq the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

SECTION 3: Composition/information on ingredients
--

3.2. Mixtures

Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS-No. EC Number REACH-Reg No.	Concentration	Classification	Specific Conc. Limits, M-factors and ATEs	Add. Information
Pentaerythritol-PO-mercaptoglycerol 72244-98-5 701-196-7 01-2120118957-46	25- 50 %	Skin Sens. 1B, H317 Aquatic Chronic 3, H412		
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3 01-2120766318-46	20- < 40 %	Acute Tox. 4, Oral, H302 Skin Sens. 1, H317 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	M acute = 1 M chronic = 1 ===== oral:ATE = 301 mg/kg	
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2 202-013-9 01-2119560597-27	5- < 10 %	Acute Tox. 4, Oral, H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319		
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0 01-2119487006-38	5- < 10 %	Skin Corr. 1C, H314 Skin Sens. 1A, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Eye Dam. 1, H318	M acute = 1 M chronic = 1 ===== oral:ATE = 2.500 mg/kg	
N-Aminopropylmorpholine 123-00-2 204-590-2 01-2120768952-40	5- < 10 %	Skin Corr. 1B, H314 Acute Tox. 4, Oral, H302 Eye Dam. 1, H318		
Diaminopolypropylene glycol 9046-10-0	1- < 3 %	Acute Tox. 4, Oral, H302 Acute Tox. 4, Dermal, H312 Skin Corr. 1B, H314 Aquatic Chronic 3, H412 Eye Dam. 1, H318		
Fatty acids, tall-oil, reaction products with phenyloxirane and tetraethylenepentamine 362679-79-6	1- < 3 %	Skin Corr. 1B, H314 Eye Dam. 1, H318		
Bis[(dimethylamino)methyl]phenol 71074-89-0 275-162-0	1- < 3 %	Skin Corr. 1C, H314 Eye Dam. 1, H318 Acute Tox. 4, Oral, H302		
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2 229-713-7 01-2119977097-24	0,1- < 1 %	Acute Tox. 3, Oral, H301 Skin Corr. 1B, H314 Eye Dam. 1, H318 Met. Corr. 1, H290	oral:ATE = 215 mg/kg	
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7 292-587-7, 292-587-7 01-2119487290-37	0,1- < 1 %	Acute Tox. 4, Dermal, H312 Skin Corr. 1B, H314 Skin Sens. 1, H317 Aquatic Chronic 2, H411 Eye Dam. 1, H318		
Ethylenediamine 107-15-3 203-468-6 01-2119480383-37	0,1- < 1 %	Flam. Liq. 3, H226 Acute Tox. 4, Oral, H302 Acute Tox. 3, Dermal, H311 Skin Corr. 1B, H314 Skin Sens. 1B, H317 Acute Tox. 4, Inhalation, H332 Resp. Sens. 1B, H334 Aquatic Chronic 3, H412		SVHC

If no ATE values are displayed, please refer to LD/LC50 values in Section 11.
For full text of the H - statements and other abbreviations see section 16 "Other information".

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:

Rinse with running water and soap.

Obtain medical attention if irritation persists.

Eye contact:

Rinse immediately with plenty of running water (for 10 minutes), seek medical attention from a specialist.

Ingestion:

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

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

SKIN: Rash, Urticaria.

INGESTION: Nausea, vomiting, diarrhea, abdominal pain.

Causes burns.

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

See section: Description of first aid measures

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

water, carbon dioxide, foam, powder

Extinguishing media which must not be used for safety reasons:

High pressure waterjet

5.2. Special hazards arising from the substance or mixture

In the event of a fire, carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x) can be released.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Additional information:

In case of fire, keep containers cool with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes.

Wear protective equipment.

Ensure adequate ventilation.

6.2. Environmental precautions

Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up

Dispose of contaminated material as waste according to Section 13.

For small spills wipe up with paper towel and place in container for disposal.

For large spills absorb onto inert absorbent material and place in sealed container for disposal.

6.4. Reference to other sections

See advice in section 8

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Avoid skin and eye contact.

See advice in section 8

Hygiene measures:

Good industrial hygiene practices should be observed.

Do not eat, drink or smoke while working.

Wash hands before work breaks and after finishing work.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, well-ventilated place.

Refer to Technical Data Sheet

7.3. Specific end use(s)

Epoxy adhesive

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Occupational Exposure Limits**

Valid for
Germany

None

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	aqua (freshwater)		0,07 mg/l				
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	Freshwater - intermittent		0,12 mg/l				
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	aqua (marine water)		0,007 mg/l				
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	sediment (freshwater)				0,322 mg/kg		
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	sediment (marine water)				0,032 mg/kg		
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptop 72244-98-5	sewage treatment plant (STP)		10 mg/l				
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	sewage treatment plant (STP)		1 mg/l				
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	sediment (freshwater)				0,002 mg/kg		
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	aqua (intermittent releases)		0,002 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	aqua (freshwater)		0,046 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	aqua (marine water)		0,005 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Freshwater - intermittent		0,46 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Marine water - intermittent		0,046 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	sewage treatment plant (STP)		0,2 mg/l				
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	sediment (freshwater)				0,262 mg/kg		
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	sediment (marine water)				0,026 mg/kg		
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Soil				0,025 mg/kg		
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	aqua (freshwater)		0,0307 mg/l				
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	aqua (marine water)		0,00307 mg/l				
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	aqua (intermittent releases)		0,00612 mg/l				

Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	sewage treatment plant (STP)		2,3 mg/l				
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	sediment (freshwater)				119,8 mg/kg		
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	sediment (marine water)				11,98 mg/kg		
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Air						no hazard identified
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Soil				9,44 mg/kg		
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	oral				20 mg/kg		
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	aqua (freshwater)		0,24 mg/l				
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	aqua (marine water)		0,024 mg/l				
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	aqua (intermittent releases)		0,5 mg/l				
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	sewage treatment plant (STP)		13 mg/l				
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	sediment (freshwater)				1,46 mg/kg		
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	sediment (marine water)				0,146 mg/kg		
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	Soil				0,152 mg/kg		
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	aqua (freshwater)		0,01 mg/l				
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	aqua (marine water)		0,001 mg/l				
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	aqua (intermittent releases)		0,068 mg/l				
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	sediment (freshwater)				3,198 mg/kg		
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	sediment (marine water)				0,32 mg/kg		
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Soil				2,5 mg/kg		
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	sewage treatment plant (STP)		4,6 mg/l				
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Air						no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Predator						no potential for bioaccumulation
Ethylenediamine 107-15-3	aqua (freshwater)		0,016 mg/l				
Ethylenediamine 107-15-3	aqua (marine water)		0,002 mg/l				
Ethylenediamine 107-15-3	aqua (intermittent releases)		0,167 mg/l				
Ethylenediamine 107-15-3	sewage treatment plant (STP)		0,5 mg/l				
Ethylenediamine 107-15-3	Soil				4,36 mg/kg		
Ethylenediamine	sediment				7,68 mg/kg		

107-15-3	(freshwater)						
Ethylenediamine 107-15-3	sediment (marine water)				0,768 mg/kg		
Ethylenediamine 107-15-3	oral				4,9 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptan 72244-98-5	Workers	inhalation	Long term exposure - systemic effects		22 mg/m ³	
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptan 72244-98-5	Workers	dermal	Long term exposure - systemic effects		2,7 mg/kg	
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptan 72244-98-5	General population	inhalation	Long term exposure - systemic effects		6,52 mg/m ³	
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptan 72244-98-5	General population	dermal	Long term exposure - systemic effects		1,61 mg/kg	
Poly[oxy(methyl-1,2-ethanediyl)], a-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), 2-hydroxy-3-mercaptan 72244-98-5	General population	oral	Long term exposure - systemic effects		1,9 mg/kg	
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	Workers	dermal	Long term exposure - systemic effects		0,6 mg/kg	
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	Workers	inhalation	Long term exposure - systemic effects		0,529 mg/m ³	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Workers	inhalation	Long term exposure - systemic effects		0,53 mg/m ³	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Workers	inhalation	Acute/short term exposure - systemic effects		2,1 mg/m ³	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Workers	dermal	Long term exposure - systemic effects		0,15 mg/kg	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	Workers	dermal	Acute/short term exposure - systemic effects		0,6 mg/kg	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	General population	inhalation	Long term exposure - systemic effects		0,13 mg/m ³	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	General population	inhalation	Acute/short term exposure - systemic effects		0,13 mg/m ³	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	General population	dermal	Long term exposure - systemic effects		0,075 mg/kg	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	General population	dermal	Acute/short term exposure - systemic effects		0,075 mg/kg	
2,4,6-Tris(dimethylaminomethyl)phenol 90-72-2	General population	oral	Long term exposure - systemic effects		0,075 mg/kg	
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Workers	inhalation	Long term exposure - systemic effects		29 mg/m ³	no hazard identified
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Workers	dermal	Long term exposure - systemic effects		4,2 mg/kg	no hazard identified
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	General population	inhalation	Long term exposure - systemic effects		8,7 mg/m ³	no hazard identified
Fatty acids C18 unsat, reaction products with	General	dermal	Long term		2,5 mg/kg	no hazard identified

tetraethylenepentamine 1226892-45-0	population		exposure - systemic effects			
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	General population	oral	Long term exposure - systemic effects		2,5 mg/kg	no hazard identified
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	Workers	inhalation	Long term exposure - systemic effects		10,6 mg/m3	
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	Workers	dermal	Long term exposure - systemic effects		3 mg/kg	
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	General population	inhalation	Long term exposure - systemic effects		2,6 mg/m3	
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	General population	dermal	Long term exposure - systemic effects		1,5 mg/kg	
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	General population	oral	Long term exposure - systemic effects		1,5 mg/kg	
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Workers	inhalation	Long term exposure - systemic effects		1,29 mg/m3	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Workers	inhalation	Acute/short term exposure - systemic effects		6940 mg/m3	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Workers	dermal	Long term exposure - systemic effects		0,74 mg/kg	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Workers	dermal	Long term exposure - local effects		0,036 mg/cm2	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	inhalation	Long term exposure - systemic effects		0,38 mg/m3	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	inhalation	Acute/short term exposure - systemic effects		2071 mg/m3	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	dermal	Long term exposure - systemic effects		0,32 mg/kg	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	dermal	Acute/short term exposure - systemic effects		10 mg/kg	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	dermal	Long term exposure - local effects		0,56 mg/cm2	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	dermal	Acute/short term exposure - local effects		1,29 mg/cm2	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	oral	Long term exposure - systemic effects		0,53 mg/kg	no hazard identified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	General population	oral	Acute/short term exposure - systemic effects		26 mg/kg	no hazard identified
Ethylenediamine 107-15-3	Workers	dermal	Long term exposure - systemic effects		3,6 mg/kg	
Ethylenediamine 107-15-3	Workers	inhalation	Long term exposure - systemic effects		25 mg/m3	
Ethylenediamine 107-15-3	General population	oral	Long term exposure - systemic effects		0,275 mg/kg	
Ethylenediamine 107-15-3	General population	inhalation	Long term exposure - systemic effects		12,5 mg/m3	

Biological Exposure Indices:

None

8.2. Exposure controls:

Engineering controls:

Ensure good ventilation/extraction.

Respiratory protection:

Ensure adequate ventilation.

An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area

Filter type: A (EN 14387)

Hand protection:

Chemical-resistant protective gloves (EN 374).

Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):

nitrile rubber (NBR; ≥ 0.4 mm thickness)

Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):

nitrile rubber (NBR; ≥ 0.4 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:

Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing.

Protective eye equipment should conform to EN166.

Skin protection:

Wear suitable protective clothing.

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Delivery form	liquid
Colour	Clear, yellow
Odor	characteristic
Physical state	liquid
Melting point	Not applicable, Product is a liquid
Solidification temperature	< 5 °C (< 41 °F)
Initial boiling point	> 250 °C (> 482 °F)
Flammability	The product is not flammable.
Explosive limits	Not applicable, The product is not flammable.
Flash point	> 100 °C (> 212 °F)
Auto-ignition temperature	Not applicable, The product is not flammable.
Decomposition temperature	Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use
pH	Not applicable, Product is non-soluble (in water).
Viscosity (kinematic) (40 °C (104 °F);)	> 20,5 mm ² /s
Viscosity, dynamic	10.000 - 40.000 mPa.s LCT STM 10; Viscosity Brookfield

(Brookfield; Instrument: RVT; 25 °C (77 °F); speed of rotation: 10 min-1; Spindle No: 6)	
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	Insoluble
Partition coefficient: n-octanol/water	Not applicable Mixture
Vapour pressure (20 °C (68 °F))	< 700 mbar
Density (25 °C (77 °F))	1,12 g/cm ³ None
Relative vapour density: (20 °C)	> 1
Particle characteristics	Not applicable Product is a liquid

9.2. Other information

Other information not applicable for this product

SECTION 10: Stability and reactivity

10.1. Reactivity

Reaction with strong acids.
Reacts with strong oxidants.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

See section reactivity

10.4. Conditions to avoid

Stable under normal conditions of storage and use.

10.5. Incompatible materials

See section reactivity.

10.6. Hazardous decomposition products

carbon oxides.

SECTION 11: Toxicological information

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

Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	LD50	2.600 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	Acute toxicity estimate (ATE)	301 mg/kg		Expert judgement
2,4,6- tris(dimethylaminomethyl)phenol 90-72-2	LD50	1.200 mg/kg	rat	not specified
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	LD50	> 2.000 mg/kg	rat	OECD Guideline 423 (Acute Oral toxicity)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Acute toxicity estimate (ATE)	2.500 mg/kg		Expert judgement
N- Aminopropylmorpholine 123-00-2	LD50	1.790,9 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
Diaminopolypropylene glycol 9046-10-0	LD50	1.099 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
Fatty acids, tall-oil, reaction products with phenyloxirane and tetraethylenepentamine 362679-79-6	LD50	> 2.000 mg/kg	rat	not specified
Bis[(dimethylamino)meth yl]phenol 71074-89-0	LD50	1.200 mg/kg	rat	not specified
1,8- Diazabicyclo[5.4.0]undec -7-ene 6674-22-2	Acute toxicity estimate (ATE)	215 mg/kg		Expert judgement
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	LD50	3.221 mg/kg	rat	not specified
Ethylenediamine 107-15-3	LD50	841 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)

Acute dermal toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	LD50	> 10.200 mg/kg	rabbit	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)
N- Aminopropylmorpholine 123-00-2	LD50	2.297,9 mg/kg	rabbit	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)
Diaminopolypropylene glycol 9046-10-0	LD50	1.555 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	LD50	1.260 mg/kg	rabbit	not specified
Ethylenediamine 107-15-3	LD50	560 mg/kg	rabbit	not specified

Acute inhalative toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
Ethylenediamine 107-15-3	LC50	14,7 mg/l	vapour	4 h	rat	not specified

Skin corrosion/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2,4,6- tris(dimethylaminomethyl)phenol 90-72-2	corrosive	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2,4,6- tris(dimethylaminomethyl)phenol 90-72-2	Sub-Category 1C (corrosive)		Corrositex Biobarrier Membrane (reconstituted collagen matrix)	OECD Guideline 435 (In Vitro Membrane Barrier Test Method for Skin Corrosion)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Sub-Category 1C (corrosive)	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
N- Aminopropylmorpholine 123-00-2	Sub-Category 1B (corrosive)	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	corrosive		Corrositex Biobarrier Membrane (reconstituted collagen matrix)	OECD Guideline 435 (In Vitro Membrane Barrier Test Method for Skin Corrosion)
Ethylenediamine 107-15-3	Category 1B (corrosive)		rabbit	BASF Test

Serious eye damage/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	not irritating		rabbit	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	Category 1 (irreversible effects on the eye)		Bovine, cornea, in vitro test	OECD Guideline 437 (BCOP)

Respiratory or skin sensitization:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,4,6- tris(dimethylaminomethyl)phenol 90-72-2	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
2,4,6- tris(dimethylaminomethyl)phenol 90-72-2	not sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Sub-Category 1A (sensitising)	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Diaminopolypropylene glycol 9046-10-0	not sensitising		guinea pig	not specified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Sensitizing	Guinea pig maximisation test	guinea pig	equivalent or similar to OECD Guideline 406 (Skin Sensitisation)
Ethylenediamine 107-15-3	Sensitizing	Guinea pig maximisation test	guinea pig	not specified

Germ cell mutagenicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	negative		with and without		OECD Guideline 490 (In Vitro Mammalian Cell Gene Mutation Tests Using the Thymidine Kinase Gene)
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	positive	mammalian cell gene mutation assay	with and without		equivalent or similar to OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	positive	sister chromatid exchange assay in mammalian cells	with and without		equivalent or similar to OECD Guideline 479 (Genetic Toxicology: In Vitro Sister Chromatid Exchange Assay in Mammalian Cells)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	negative	in vitro mammalian cell micronucleus test	with and without		OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Ethylenediamine 107-15-3	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Amines, polyethylenepoly-, tetraethylenepentamine	negative	intraperitoneal		mouse	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus

fraction 90640-66-7					Test)
Ethylenediamine 107-15-3	negative	oral: feed		rat	not specified

Carcinogenicity

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
Ethylenediamine 107-15-3		oral: feed	2 years every second week	rat	male/female	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Reproductive toxicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	NOAEL P 60 mg/kg	screening	oral: gavage	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	NOAEL P >= 300 mg/kg NOAEL F1 >= 300 mg/kg	screening	oral: gavage	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Ethylenediamine 107-15-3	NOAEL P 23 mg/kg NOAEL F1 227 mg/kg	two- generation study	oral: feed	rat	OECD Guideline 416 (Two- Generation Reproduction Toxicity Study)

STOT-single exposure:

No data available.

STOT-repeated exposure:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	NOAEL 60 mg/kg	oral: gavage	daily	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	NOAEL >= 300 mg/kg	oral: gavage		rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	LOAEL 50 mg/kg	oral: gavage	26 w daily	rat	equivalent or similar to OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	NOAEL 200 mg/kg	dermal	20 d 6 h/d, 5 d/w	rabbit	OECD Guideline 410 (Repeated Dose Dermal Toxicity: 21/28-Day Study)

Aspiration hazard:

No data available.

11.2 Information on other hazards

not applicable

SECTION 12: Ecological information

General ecological information:

Do not empty into drains / surface water / ground water.

12.1. Toxicity

Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	LC50	87 mg/l	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	LL50	> 0,16 mg/l	96 h	Oncorhynchus mykiss	OECD Guideline 203 (Fish, Acute Toxicity Test)
2,4,6- tris(dimethylaminomethyl)phe nol 90-72-2	LC50	153 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	ISO 7346-1 (Determination of the Acute Lethal Toxicity of Substances to a Freshwater Fish [Brachydanio rerio Hamilton-Buchanan (Teleostei, Cyprinidae)])
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	LC50	0,19 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Diaminopolypropylene glycol 9046-10-0	LC50	> 100 mg/l	96 h		OECD Guideline 203 (Fish, Acute Toxicity Test)
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	LC50	> 100 - 220 mg/l	96 h	Leuciscus idus	DIN 38412-15
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	LC50	420 mg/l	96 h	Poecilia reticulata	OECD Guideline 203 (Fish, Acute Toxicity Test)
Ethylenediamine 107-15-3	NOEC	> 10 mg/l	28 d	Gasterosteus aculeatus	OECD Guideline 210 (fish early lite stage toxicity test)
Ethylenediamine 107-15-3	LC50	640 mg/l	96 h	Poecilia reticulata	EU Method C.1 (Acute Toxicity for Fish)

Toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	EC50	12 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	EL50	1,7 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2,4,6- tris(dimethylaminomethyl)phe nol	EC50	> 100 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

90-72-2					
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	EC50	0,18 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
N-Aminopropylmorpholine 123-00-2	EC50	> 100 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Diaminopolypropylene glycol 9046-10-0	EC50	15 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	EC50	50 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	EC50	24,1 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Ethylenediamine 107-15-3	EC50	16,7 mg/l	48 h	Daphnia magna	EU Method C.2 (Acute Toxicity for Daphnia)

Chronic toxicity (aquatic invertebrates):

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Pentaerythritol-PO-mercaptoglycerol 72244-98-5	NOEC	3,5 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	NOEC	0,32 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	NOEC	> 12 mg/l	21 day	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	EC10	1,9 mg/l	21 d	Daphnia magna	OECD Guideline 202 (Daphnia sp. Chronic Immobilisation Test)
Ethylenediamine 107-15-3	NOEC	0,16 mg/l	21 d	Daphnia magna	other guideline:

Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	EC50	> 733 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	NOEC	338 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	EL50	> 0,31 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	NOELR	0,1 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,4,6- tris(dimethylaminomethyl)phe nol 90-72-2	EC50	46,7 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,4,6- tris(dimethylaminomethyl)phe nol 90-72-2	NOEC	6,44 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	EC50	0,638 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	EC10	0,395 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Diaminopolypropylene glycol 9046-10-0	IC50	135 mg/l	72 h		OECD Guideline 201 (Alga, Growth Inhibition Test)
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	EC50	> 100 mg/l	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	NOEC	> 100 mg/l	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	EC50	6,8 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	NOEC	0,5 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Ethylenediamine 107-15-3	EC50	645 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	EU Method C.3 (Algal Inhibition test)
Ethylenediamine 107-15-3	NOEC	3,2 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	EU Method C.3 (Algal Inhibition test)

Toxicity (microorganisms):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Pentaerythritol-PO-	EC50	> 1.000 mg/l	3 h	activated sludge of a	OECD Guideline 209

mercaptoglycerol 72244-98-5				predominantly domestic sewage	(Activated Sludge, Respiration Inhibition Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	EC50	> 100 mg/l	3 h	activated sludge of a predominantly domestic sewage	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	EC0	27 mg/l	16 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	EC50	114 mg/l	3 h	activated sludge of a predominantly domestic sewage	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	EC 50	330 mg/l	17 h		not specified
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	EC50	97,3 mg/l	2 h	other:	other guideline:
Ethylenediamine 107-15-3	EC10	0,5 mg/l	2 h	other:	not specified

12.2. Persistence and degradability

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
Pentaerythritol-PO- mercaptoglycerol 72244-98-5	not readily biodegradable.	aerobic	5 %	28 d	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
Phenol, 4,4'-(1- methylethylidene)bis-, polymer with 2- (chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	not readily biodegradable.	aerobic	0 %	28 d	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
2,4,6- tris(dimethylaminomethyl)phe nol 90-72-2	not readily biodegradable.	aerobic	4 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	not readily biodegradable.	aerobic	24 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Diaminopolypropylene glycol 9046-10-0	not readily biodegradable.	aerobic	31 %	28 day	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Diaminopolypropylene glycol 9046-10-0	not inherently biodegradable	aerobic	17 %	28 day	OECD Guideline 302 B (Inherent biodegradability: Zahn- Wellens/EMPA Test)
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	not inherently biodegradable	aerobic	< 20 %	28 day	OECD Guideline 302 B (Inherent biodegradability: Zahn- Wellens/EMPA Test)
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	not readily biodegradable.	aerobic	< 20 %	28 day	OECD Guideline 301 A (new version) (Ready Biodegradability: DOC Die Away Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	not readily biodegradable.	aerobic	0 %	162 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	not inherently biodegradable	aerobic	17 %	84 d	OECD Guideline 302 A (Inherent Biodegradability: Modified SCAS Test)
Ethylenediamine 107-15-3	readily biodegradable	aerobic	95 %	28 d	EU Method C.4-E (Determination of the "Ready" Biodegradability/Closed Bottle Test)
Ethylenediamine 107-15-3	inherently biodegradable	aerobic	> 90 %	10 d	OECD Guideline 302 B (Inherent biodegradability: Zahn- Wellens/EMPA Test)

12.3. Bioaccumulative potential

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Bioconcentratio n factor (BCF)	Exposure time	Temperature	Species	Method
1,8-Diazabicyclo[5.4.0]undec- 7-ene 6674-22-2	< 0,4	42 day		Cyprinus carpio	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)

12.4. Mobility in soil

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	LogPow	Temperature	Method
Pentaerythritol-PO-mercaptoglycerol 72244-98-5	1,2	20 °C	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	-0,66	21,5 °C	EPA OPPTS 830.7550 (Partition Coefficient, n-octanol / H ₂ O, Shake Flask Method)
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	2,2	25,2 °C	OECD Guideline 123 (Partition Coefficient (1-Octanol / Water), Slow-Stirring Method)
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	-3,16		QSAR (Quantitative Structure Activity Relationship)
Ethylenediamine 107-15-3	-4,42	25 °C	QSAR (Quantitative Structure Activity Relationship)

12.5. Results of PBT and vPvB assessment

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	PBT / vPvB
Pentaerythritol-PO-mercaptoglycerol 72244-98-5	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, reaction products with ethylenediamine 72480-18-3	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
2,4,6-tris(dimethylaminomethyl)phenol 90-72-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Fatty acids C18 unsat, reaction products with tetraethylenepentamine 1226892-45-0	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
N-Aminopropylmorpholine 123-00-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Fatty acids, tall-oil, reaction products with phenyloxirane and tetraethylenepentamine 362679-79-6	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
1,8-Diazabicyclo[5.4.0]undec-7-ene 6674-22-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Amines, polyethylenepoly-, tetraethylenepentamine fraction 90640-66-7	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Ethylenediamine 107-15-3	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

12.6. Endocrine disrupting properties

not applicable

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:

Do not empty into drains / surface water / ground water.
Dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:

After use, tubes, cartons and bottles containing residual product should be disposed of as chemically contaminated waste in an authorised legal land fill site or incinerated.

Waste code

08 04 09* waste adhesives and sealants containing organic solvents and other dangerous substances

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

SECTION 14: Transport information**14.1. UN number or ID number**

ADR	2735
RID	2735
ADN	2735
IMDG	2735
IATA	2735

14.2. UN proper shipping name

ADR	AMINES, LIQUID, CORROSIVE, N.O.S. (N-Aminopropylmorpholine,Polyoxy propylene diamine)
RID	AMINES, LIQUID, CORROSIVE, N.O.S. (N-Aminopropylmorpholine,Polyoxy propylene diamine)
ADN	AMINES, LIQUID, CORROSIVE, N.O.S. (N-Aminopropylmorpholine,Polyoxy propylene diamine)
IMDG	AMINES, LIQUID, CORROSIVE, N.O.S. (N-Aminopropylmorpholine,Polyoxy propylene diamine,Aliphatic Amine Adduct)
IATA	Amines, liquid, corrosive, n.o.s. (N-Aminopropylmorpholine,Polyoxy propylene diamine)

14.3. Transport hazard class(es)

ADR	8
RID	8
ADN	8
IMDG	8
IATA	8

14.4. Packing group

ADR	III
RID	III
ADN	III
IMDG	III
IATA	III

14.5. Environmental hazards

ADR	Environmentally Hazardous
RID	Environmentally Hazardous

ADN	Environmentally Hazardous
IMDG	Marine Pollutant
IATA	not applicable

14.6. Special precautions for user

ADR	not applicable Tunnelcode: (E)
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Ozone Depleting Substance (ODS) (Regulation (EC) No 1005/2009):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable
VOC content (2010/75/EC)	< 3,00 %

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

National regulations/information (Germany):

WGK:	WGK 3: highly hazardous to water (Ordinance on facilities for handling substances that are hazardous to water (AwSV)) Classification according to AwSV, Annex 1 (5.2)
Storage class according to TRGS 510:	8B

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H226 Flammable liquid and vapour.
H290 May be corrosive to metals.
H301 Toxic if swallowed.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
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.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

ED:	Substance identified as having endocrine disrupting properties
EU OEL:	Substance with a Union workplace exposure limit
EU EXPLD 1:	Substance listed in Annex I, Reg (EC) No. 2019/1148
EU EXPLD 2	Substance listed in Annex II, Reg (EC) No. 2019/1148
SVHC:	Substance of very high concern (REACH Candidate List)
PBT:	Substance fulfilling persistent, bioaccumulative and toxic criteria
PBT/vPvB:	Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria
vPvB:	Substance fulfilling very persistent and very bioaccumulative criteria

Further information:

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