Section 1. Identification of the substance/preparation and of the company/undertaking

Product name:
LOCTITE ABLESTIK 8290

Other means of identification:
LOCTITE ABLESTIK 8290

Product code:
IDH2017227
Recommended use of the chemical and restrictions on use

Intended use:
Die attach adhesive
Manufacturer/Importer/Distributor Representative Company
Henkel Thailand Ltd. The Offices at Centralworld,
35th Floor, 999/9 Rama 1 Rd.,
Kwang Patumwan, Khet Patumwan,
10330 Bangkok

Thailand

Phone: +66 (2209) 8000
Fax-no.: +66 (2209) 8008

E-mail address of person responsible for Safety Data Sheet:
ap-ua-psra.sea@henkel.com

Emergency Telephone for Chemical Accidents:
FOR EMERGENCIES ONLY (Spill, major leak, Fire, Exposure, or Accident). Call: +662 209 8008

Section 2. Hazards identification

GHS Classification:

Hazard Class	Hazard Category	Target organ
Skin corrosion/irritation	Category 2	
Serious eye damage/eye irritation	Category 1	
Skin sensitizer	Category 1	
Germ cell mutagenicity	Category 2	
Toxic to reproduction	Category 1B	
Specific target organ toxicity - repeated exposure	Category 2	Nervous system
Acute hazards to the aquatic environment	Category 1	
Chronic hazards to the aquatic environment	Category 1	

GHS label elements:

Hazard pictogram:



Signal word:
Danger

Hazard statement:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H341 Suspected of causing genetic defects.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precaution:

Prevention:
P201 Obtain special instructions before use.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P302+P352 IF ON SKIN: Wash with plenty of water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Disposal:
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Section 3. Composition / information on ingredients

Substance or Mixture:
Mixture

Declaration of hazardous chemical:

Hazard component CAS-No.	Content	GHS Classification
Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	60- 100 %	Toxic to reproduction 2 H361 Specific target organ toxicity - repeated exposure 2 H373 Acute hazards to the aquatic environment 1 H400 Chronic hazards to the aquatic environment 1 H410
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	1- 10 %	Skin corrosion/irritation 2 H315 Skin sensitizer 1A H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	1- 10 %	Acute toxicity 5; Oral H303 Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 2A H319 Skin sensitizer 1 H317 Specific target organ toxicity - single exposure 3 H335 Chronic hazards to the aquatic environment 4 H413
.gamma.-Butyrolactone 96-48-0	1- 10 %	Acute toxicity 4; Oral H302 Serious eye damage/eye irritation 1 H318 Specific target organ toxicity - single exposure 3 H336 Acute hazards to the aquatic environment 3 H402
A mixture of: 4-allyl-2,6-bis (2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxy-propyl]-2-(2,3-epoxypropyl)phenol	1- 10 %	Skin sensitizer 1 H317 Germ cell mutagenicity 2 H341
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	1- 10 %	Acute toxicity 4; Oral H302 Acute toxicity 5; Dermal H313 Skin corrosion/irritation 1 H314 Serious eye damage/eye irritation 1 H318 Acute hazards to the aquatic environment 3 H402 Chronic hazards to the aquatic environment 3 H412
Copper oxide 1317-38-0	1- 10 %	Acute hazards to the aquatic environment 1 H400 Chronic hazards to the aquatic environment 1 H410
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	0.1- 1 %	Acute toxicity 4; Oral H302 Acute toxicity 4; Inhalation H332

		Acute toxicity 4; Dermal H312 Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 1 H318 Skin sensitizer 1 H317 Toxic to reproduction 1B H360 Acute hazards to the aquatic environment 3 H402

Section 4. First aid measures

Inhalation:
Move to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
If symptoms develop and persist, get medical attention.

Skin contact:
Immediately flush skin with plenty of water (using soap, if available).
Remove contaminated clothing and footwear.
If symptoms develop and persist, get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Get medical attention.

Ingestion:
DO NOT induce vomiting unless directed to do so by medical personnel.
Never give anything by mouth to an unconscious person.
Get medical attention.

Section 5. Fire fighting measures

Suitable extinguishing media:

Water spray (fog), foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical:
Closed containers may rupture (due to build up of pressure) when exposed to extreme heat.
In case of fire, keep containers cool with water spray.

Special protection equipment and precautions for firefighters:
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Hazardous combustion products:
Oxides of carbon.
Oxides of nitrogen.
Oxides of silicon.
Oxides of Metals in Section 3.
Organic acids.
Cyanides.
Formaldehyde.
Hydrogen fluoride.
Toxic and irritating vapors.

Section 6. Accidental release measures

Personal precautions:
Wear protective equipment.
Avoid skin and eye contact.
Ensure adequate ventilation.

Environmental precautions:
Do not empty into drains / surface water / ground water.

Clean-up methods:
Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Store in a closed container until ready for disposal.

Section 7. Handling and storage

Handling:
Use only with adequate ventilation.
Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling.
Keep container closed.

Storage:
Protect from direct sunlight.
Keep container tightly sealed.
Refer to Technical Data Sheet.

Section 8. Exposure controls / personal protection

Components with specific control parameters for workplace:

Silver, metal, dust and fume 7440-22-4	**Value type**	Time Weighted Average (TWA):
	mg/m³	0.1
	Remarks	ACGIH
COPPER, FUME AS CU 1317-38-0	**Value type**	Time Weighted Average (TWA):
	mg/m³	0.2
	Remarks	ACGIH
COPPER, DUSTS AND MISTS, AS CU 1317-38-0	**Value type**	Time Weighted Average (TWA):
	mg/m³	1
	Remarks	ACGIH

Respiratory protection:
Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Hand protection:
Suitable protective gloves.

Eye protection:
Safety goggles or safety glasses with side shields.
Full face protection should be used if the potential for splashing or spraying of product exists.

Body protection:
Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact.

Engineering controls:
Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

General protection and hygiene measures:
The workplace should be equipped with an emergency shower and eye-rinsing facility.

Hygienic measures:
Wash hands before work breaks and after finishing work.
Do not eat, drink or smoke while working.
Take off contaminated clothing and wash before reuse.

Section 9. Physical and chemical properties

Appearance:	Silver liquid
Odor:	Acrylic
Odor threshold (CA):	No data available.
pH:	No data available.
Melting point / freezing point:	No data available.
Specific gravity:	3.8
Boiling point:	No data available.
Flash point:	> 98 °C (> 208.4 °F)
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Lower explosive limit:	No data available.
Upper explosive limit:	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	3.8 g/cm3
Solubility:	Insoluble
Partition coefficient: n-	No data available.

octanol/water:
Auto ignition: No data available.
Decomposition temperature: No data available.
Viscosity: No data available.

VOC content: No data available.

Section 10. Stability and reactivity

Reactivity/Incompatible materials:
Oxidizing agents.
Reducing agents.
Strong acids and strong bases.
Ammonia.
Peroxides.
Amines.
Water.
Chemical stability:
Stable under recommended storage conditions.
Conditions to avoid:
Keep away from heat, ignition sources and incompatible materials.
Protect from direct sunlight.
Avoid moisture.
Hazardous decomposition products:
Oxides of carbon.
Oxides of nitrogen.
Oxides of silicon.
Oxides of Metals in Section 3.
Organic acids.
Cyanides.
Formaldehyde.
Hydrogen fluoride.
Toxic fumes.
Irritating vapors.

Section 11. Toxicological information

Oral toxicity: Acute toxicity estimate (ATE) : > 2,000 mg/kg
Method: Calculation method

Health Effects:

Skin: Causes skin irritation.
May cause allergic skin reaction.
Eyes: Causes serious eye irritation.
Symptoms of Overexposure**:** None known.

Acute oral toxicity:

Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LD50
	Value	> 5,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 420 (Acute Oral Toxicity)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	Acute toxicity estimate (ATE)
	Value	2,500 mg/kg
	Species	
	Method	Expert judgement
.gamma.-Butyrolactone 96-48-0	Value type	LD50
	Value	1,582 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	LD50
	Value	475 mg/kg
	Species	rat
	Method	not specified
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	LD50
	Value	1,118 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)

Acute inhalative toxicity:

.gamma.-Butyrolactone 96-48-0	Value type	LC50
	Value	> 5.1 mg/l
	Exposure time	4 h
	Species	rat
	Method	OECD Guideline 403 (Acute Inhalation Toxicity)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	Acute toxicity estimate (ATE)
	Value	11.01 mg/l
	Exposure time	4 h
	Species	
	Method	Expert judgement

Acute dermal toxicity:

Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
.gamma.-Butyrolactone 96-48-0	Value type	LD50
	Value	> 5,640 mg/kg
	Species	rabbit
	Method	not specified
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	LD50
	Value	2,085.8 mg/kg
	Species	rabbit
	Method	not specified
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	LD50
	Value	1,130 mg/kg
	Species	rabbit
	Method	not specified

Skin corrosion/irritation:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	irritating
	Exposure time	4 h
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Result	irritating
	Exposure time	
	Species	rabbit
	Method	not specified
.gamma.-Butyrolactone 96-48-0	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	BASF Test
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Result	corrosive
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Result	irritating
	Exposure time	
	Species	rabbit
	Method	not specified
.gamma.-Butyrolactone 96-48-0	Result	highly irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Result	corrosive
	Exposure time	
	Species	rabbit
	Method	Expert judgement
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	Category 1 (irreversible effects on the eye)
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	Sub-Category 1A (sensitising)
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Result	sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
.gamma.-Butyrolactone 96-48-0	Result	not sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	sensitising
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Result	negative
	Type of study / Route of administration	in vitro mammalian cell micronucleus test
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	positive
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 486 (Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo)
.gamma.-Butyrolactone 96-48-0	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
.gamma.-Butyrolactone 96-48-0	Result	negative
	Type of study / Route of administration	oral: feed
	Metabolic activation / Exposure time	
	Species	Drosophila melanogaster
	Method	OECD Guideline 477 (Genetic Toxicology: Sex-linked Recessive Lethal Test in Drosophila melanogaster)
A mixture of: 4-allyl-2,6-bis (2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxy-propyl]-2-(2,3-epoxypropyl)phenol	Result	positive with metabolic activation
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	
	Method	not specified
A mixture of: 4-allyl-2,6-bis (2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-(4-allyl-2,6-bis(2,3-	Result	positive
	Type of study / Route of administration	intraperitoneal
	Metabolic activation / Exposure time	
	Species	
	Method	not specified

epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxy-propyl]-2-(2,3-epoxypropyl)phenol		
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	positive
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	positive
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	positive
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Repeated dose toxicity:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	NOAEL=250 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	13 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
.gamma.-Butyrolactone 96-48-0	Result	NOAEL=225 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	13 w5 d/w
	Species	rat
	Method	not specified
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	NOAEL=200 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	28 ddaily
	Species	rat
	Method	OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity in Rodents)

Section 12. Ecological information

General ecological information: Do not empty into drains / surface water / ground water.

Ecotoxicity: H410 Very toxic to aquatic life with long lasting effects.

Toxicity:

Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Value type	LC50
	Value	0.0012 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas

	Method	other guideline:
	Value type	EC10
	Value	0.00019 mg/l
	Acute Toxicity Study	Fish
	Exposure time	217 d
	Species	Salmo trutta
	Method	OECD Guideline 210 (fish early lite stage toxicity test)
Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Value type	EC50
	Value	0.00022 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	other guideline:
Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Value type	EC10
	Value	0.00016 mg/l
	Acute Toxicity Study	Algae
	Exposure time	15 d
	Species	other:
	Method	other guideline:
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LC50
	Value	5.7 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Leuciscus idus
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	EC50
	Value	2.55 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	EC50
	Value	1.8 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge, industrial
	Method	other guideline:
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	LL50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	EL50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Value type	EL50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOELR
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
.gamma.-Butyrolactone 96-48-0	Value type	LC50
	Value	220 - 460 mg/l
	Acute Toxicity Study	Fish

	Exposure time	96 h
	Species	Leuciscus idus
	Method	DIN 38412-15
	Value type	LC50
	Value	56 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Lepomis macrochirus
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
.gamma.-Butyrolactone 96-48-0	Value type	EC50
	Value	> 500 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	EU Method C.2 (Acute Toxicity for Daphnia)
.gamma.-Butyrolactone 96-48-0	Value type	EC50
	Value	360 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
.gamma.-Butyrolactone 96-48-0	Value type	EC50
	Value	> 10,000 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	17 h
	Species	
	Method	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	LC50
	Value	> 15 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	EC50
	Value	15 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	EC50
	Value	15 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC10
	Value	1.4 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Value type	EC50
	Value	750 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge of a predominantly domestic sewage
	Method	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	LC50
	Value	19.8 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Danio rerio
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
	Value type	EC10
	Value	1.11 mg/l
	Acute Toxicity Study	Fish
	Exposure time	35 d
	Species	Danio rerio
	Method	OECD Guideline 210 (fish early lite stage toxicity test)

1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	EC50
	Value	75 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	24 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	EC50
	Value	> 160 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOELR
	Value	40 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge
	Method	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)

Persistence and degradability:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	28 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
.gamma.-Butyrolactone 96-48-0	Result	readily biodegradable
	Route of application	aerobic
	Degradability	95 %
	Method	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))
A mixture of: 4-allyl-2,6-bis (2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-2-(2,3-epoxypropyl)phenol; 4-allyl-6-[3-[6-[3-(4-allyl-2,6-bis(2,3-epoxypropyl)phenoxy)-2-hydroxypropyl]-4-allyl-2-(2,3-epoxypropyl)phenoxy]-2-hydroxy-propyl]-2-(2,3-epoxypropyl)phenol	Result	
	Route of application	
	Degradability	7 %
	Method	not specified
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	38 %
	Method	OECD Guideline 301 E (Ready biodegradability: Modified OECD Screening Test)

	Result	inherently biodegradable
	Route of application	aerobic
	Degradability	98 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)

Bioaccumulative potential / Mobility in soil:

Silver >= 99,9 % Ag as powder (>100nm<1mm) classified for environment 7440-22-4	Bioconcentration factor (BCF)	70
	Exposure time	42 d
	Species	Cyprinus carpio
	Temperature	20 °C
	Method	other guideline:
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	LogPow	2.7 - 3.6
	Temperature	
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
Fatty acids, C18-unsatd., dimers, polymers with epichlorohydrin 68475-94-5	LogPow	> 6.5
	Temperature	20 °C
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
.gamma.-Butyrolactone 96-48-0	LogPow	-0.566
	Temperature	
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Poly[oxy(methyl-1,2-ethanediyl)], a-(2-aminomethylethyl)-w-(2-aminomethylethoxy)- 9046-10-0	LogPow	1.34
	Temperature	25 °C
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
1,4-bis(2,3 epoxypropoxy)butane 2425-79-8	LogPow	-0.269
	Temperature	25 °C
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)

Section 13. Disposal considerations

Product

Method of disposal:
Dispose of in accordance with local and national regulations.

Packaging

Disposal of uncleaned packages:
Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

Section 14. Transport information

Road transport ADR:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver)

Railroad transport RID:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver)

Inland water transport ADN:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver)

Marine transport IMDG:

Class:	9
Packing group:	III
UN no.:	3082
Label:	9
EmS:	F-A ,S-F
Seawater pollutant:	Marine pollutant
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver)

Air transport IATA:

Class:	9
Packing group:	III
Packaging instructions (passenger):	964
Packaging instructions (cargo):	964
UN no.:	3082
Label:	9
Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Silver)

Further information for transport:

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), NZ 4.3(10) may be applied, which can result in a deviation from the transport classification for packed goods.

Section 15. Regulatory information

Regulatory Information:

Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555

Section 16. Other information

Disclaimer:
This Safety Data Sheet has been generated based on Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555 only. No warranty or representation of any kind is given with respect to the substantive or export laws of any other jurisdiction or country. Please confirm that the information provided herein conforms to the substantive export or other law of any other jurisdiction prior to export. Please contact Henkel Product Safety and Regulatory Affairs for additional assistance.
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).