Safety Data Sheet according to Singapore Standard SS 586.

LOCTITE PC 7222 known as Fixmaster Wear Resist Putty

SDS No. : 157277
V001.8
Revision: 21.02.2025
printing date: 25.03.2026

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

Product name: LOCTITE PC 7222 known as Fixmaster Wear Resist Putty

Other means of identification: LOCTITE PC 7222
Product code: IDH702268
Recommended use of the chemical and restrictions on use

Intended use: Epoxy Hardener
Manufacturer/Importer/Distributor Representative Company

Henkel Singapore Pte Ltd
Science Park Drive 1B
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119315 Singapore

Singapore

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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: +65 6424 7016

Section 2. Hazards identification

GHS Classification:

Hazard Class	Hazard Category	Route of Exposure
Acute toxicity	Category 4	Inhalation
Skin corrosion/irritation	Category 1B	
Serious eye damage/eye irritation	Category 1	
Skin sensitizer	Category 1	
Toxic to reproduction	Category 1B	
Acute hazards to the aquatic environment	Category 1	
Chronic hazards to the aquatic environment	Category 2	

GHS label elements:

Hazard pictogram:



Signal word: Danger

Hazard statement:
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H360 May damage fertility or the unborn child.
H410 Very toxic to aquatic life with long lasting effects.

Precaution:

Prevention:
P201 Obtain special instructions before use.
P261 Avoid breathing 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:
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340+P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.
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.
P363 Wash contaminated clothing 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
Aluminium oxide - non fibrous form 1344-28-1	60- 100 %	
2,2'-iminodiethylamine 111-40-0	1- 10 %	Acute toxicity 4; Oral H302 Acute toxicity 2; Inhalation H330 Acute toxicity 4; Dermal H312 Skin corrosion 1B H314 Serious eye damage/eye irritation 1 H318 Skin Sensitization 1B H317 Target Organ Systemic Toxicant - Single exposure 3 H335
4-nonylphenol, branched 84852-15-3	1- 10 %	Acute toxicity 4; Oral H302 Skin corrosion 1B H314 Reproductive toxicant. 2 H361 Acute hazards to the aquatic environment 1 H400 Chronic hazards to the aquatic environment 1 H410
Silica, amorphous, fumed, cryst.-free 112945-52-5	1- 10 %	
1,2-Ethanediamine, N-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer 68411-71-2	1- 10 %	Acute toxicity 4; Oral H302
4,4'-Isopropylidenediphenol 80-05-7	1- 10 %	Serious eye damage/eye irritation 1 H318 Skin Sensitization 1 H317 Reproductive toxicant. 1B H360 Target Organ Systemic Toxicant - Single exposure 3 H335 Acute hazards to the aquatic environment 1 H400 Chronic hazards to the aquatic environment 1 H410
3,6-diazaoctanethylenediamine 112-24-3	1- 10 %	Acute toxicity 4; Oral H302 Acute toxicity 4; Dermal H312 Skin corrosion 1B H314 Skin Sensitization 1 H317
2-piperazin-1-ylethylamine 140-31-8	1- 10 %	Acute toxicity 4; Oral H302 Acute toxicity 3; Dermal H311 Skin corrosion 1B H314 Skin Sensitization 1B H317 Reproductive toxicant. 2 H361
Benzyldimethylamine 103-83-3	0.1- 1 %	Flammable liquids 3 H226 Acute toxicity 4; Oral H302 Acute toxicity 3; Inhalation

		H331 Acute toxicity 4; Dermal H312 Skin corrosion 1B H314 Chronic hazards to the aquatic environment 2 H411
benzyl alcohol 100-51-6	0.1- 1 %	Acute toxicity 4; Oral H302 Serious eye irritation 2 H319 Skin Sensitization 1B H317

Section 4. 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 if necessary.

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

Indication of immediate medical attention and special treatment needed: See section: Description of first aid measures

Section 5. Fire fighting measures

Suitable extinguishing media: Carbon dioxide, foam, powder

Specific hazards arising from the chemical: 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, irritating organic vapors.
Sulphur oxides

Section 6. Accidental release measures

Personal precautions: Avoid skin and eye contact.
See advice in section 8

Environmental precautions: Do not let product enter drains.

Clean-up methods: 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.
Dispose of contaminated material as waste according to Section 13.

Section 7. Handling and storage

Handling: Use only in well-ventilated areas.
Avoid skin and eye contact.
Prolonged or repeated skin contact should be avoided to minimise any risk of sensitisation.
See advice in section 8

Storage: Store in original containers at 8-21°C (46.4-69.8°F) and do not return residual materials to containers as contamination may reduce the shelf life of the bulk product.

Section 8. Exposure controls / personal protection

Components with specific control parameters for workplace:

ALUMINUM METAL AND INSOLUBLE COMPOUNDS, RESPIRABLE FRACTION 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	1
	Remarks	ACGIH
ALUMINIUM OXIDE 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	SG OEL
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	3
	Remarks	ACGIH
Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	ACGIH
DIETHYLENE TRIAMINE 111-40-0	**Value type**	Time Weighted Average (TWA):
	ppm	1
	Remarks	ACGIH
DIETHYLENE TRIAMINE 111-40-0	**Value type**	Time Weighted Average (TWA):
	ppm	1
	mg/m³	4.2
	Remarks	SG OEL
DIETHYLENE TRIAMINE 111-40-0	**Value type**	Skin designation:
	Remarks	ACGIH Danger of cutaneous absorption
NUISANCE PARTICULATES 112945-52-5	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	SG OEL
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles 112945-52-5	**Value type**	Time Weighted Average (TWA):
	mg/m³	3
	Remarks	ACGIH
Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles 112945-52-5	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	ACGIH

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: Wear protective glasses.
Protective eye equipment should conform to EN166.

Body protection: Wear suitable protective clothing.
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

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:	Gray / Grey paste
Odor:	characteristic
Odor threshold (CA):	No data available.
pH:	Not applicable, Product is non-soluble (in water).
Melting point / freezing point:	Not applicable, Product is a liquid
Specific gravity:	1.9
Boiling point:	137 - 293 °C (278.6 - 559.4 °F)
Flash point: (Setaflash Closed Cup; ASTM D3828 Method B)	> 93 °C (> 199.4 °F)
Evaporation rate:	Slower than butyl acetate.
Flammability (solid, gas):	The product is not flammable.
Lower explosive limit:	No data available.
Upper explosive limit:	No data available.
Vapor pressure: (; 20 °C (68 °F))	< 1.3 mbar
Vapor density:	> 1
Density:	1.07 g/cm3
Solubility:	No data available.
Partition coefficient: n-octanol/water:	No data available.
Auto ignition:	No data available.
Decomposition temperature:	No data available.
Viscosity:	1,500,000 - 2,000,000 cPas (Brookfield; Instrument: RVT; 25 °C (77 °F); speed of rotation: 2.5 min-1; Method: ;; LCT STM 8500; Determination of Viscosity and Thixotropic)
VOC content: (2010/75/EC)	< 3.00 %

Section 10. Stability and reactivity

Reactivity/Incompatible materials: Reaction with strong acids.
Reacts with strong oxidants.
Chemical stability: Stable under recommended storage conditions.
Conditions to avoid: Stable
Hazardous decomposition products: carbon oxides.

Section 11. Toxicological information

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

Inhalative toxicity: Acute toxicity estimate (ATE) : 1.47 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

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

Symptoms of Overexposure**:** Causes burns.
SKIN: Rash, Urticaria.
May impair fertility.

Acute oral toxicity:

Aluminium oxide - non fibrous form 1344-28-1	Value type	LD50
	Value	> 10,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
2,2'-iminodiethylamine 111-40-0	Value type	LD50
	Value	1,553 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
4-nonylphenol, branched 84852-15-3	Value type	LD50
	Value	1,412 mg/kg
	Species	rat
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Value type	LD50
	Value	> 5,000 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
4,4'-Isopropylidenediphenol 80-05-7	Value type	LD50
	Value	> 2,000 - < 5,000 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
4,4'-Isopropylidenediphenol 80-05-7	Value type	Acute toxicity estimate (ATE)
	Value	2,500 mg/kg
	Species	
	Method	Expert judgement
3,6-diazaoctanethylenediamine 112-24-3	Value type	LD50
	Value	1,591 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
Benzyldimethylamine 103-83-3	Value type	LD50
	Value	353 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
benzyl alcohol 100-51-6	Value type	Acute toxicity estimate (ATE)
	Value	1,200 mg/kg
	Species	
	Method	Expert judgement

Acute inhalative toxicity:

2,2'-iminodiethylamine 111-40-0	Value type	LD 50
	Value	> 0.07 - < 0.30 mg/l
	Exposure time	4 h
	Species	rat
	Method	OECD Guideline 403 (Acute Inhalation Toxicity)
2,2'-iminodiethylamine 111-40-0	Value type	Acute toxicity estimate (ATE)
	Value	0.071 mg/l
	Exposure time	
	Species	
	Method	Expert judgement
Silica, amorphous, fumed, cryst.-free 112945-52-5	Value type	LC0
	Value	0.139 mg/l
	Exposure time	4 h
	Species	rat
	Method	not specified
2-piperazin-1-ylethylamine 140-31-8	Value type	Acute toxicity estimate (ATE)
	Value	> 10 mg/l
	Exposure time	4 h
	Species	
	Method	Expert judgement
Benzyldimethylamine 103-83-3	Value type	LC50
	Value	2.052 mg/l
	Exposure time	4 h
	Species	rat
	Method	not specified
benzyl alcohol 100-51-6	Value type	LC50
	Value	> 5.4 mg/l
	Exposure time	4 h
	Species	rat
	Method	OECD Guideline 403 (Acute Inhalation Toxicity)

Acute dermal toxicity:

2,2'-iminodiethylamine 111-40-0	Value type	LD50
	Value	1,045 mg/kg
	Species	rabbit
	Method	not specified
4-nonylphenol, branched 84852-15-3	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rabbit
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rabbit
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
4,4'-Isopropylidenediphenol 80-05-7	Value type	LD50
	Value	3,000 mg/kg
	Species	rabbit
	Method	not specified
3,6-diazaoctanethylenediamine 112-24-3	Value type	LD50
	Value	1,465 mg/kg
	Species	rabbit
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
2-piperazin-1-ylethylamine 140-31-8	Value type	LD50
	Value	866 mg/kg
	Species	rabbit
	Method	Draize Test
Benzyldimethylamine 103-83-3	Value type	LD50
	Value	1,477 mg/kg
	Species	rabbit
	Method	not specified
benzyl alcohol 100-51-6	Value type	Acute toxicity estimate (ATE)
	Value	2,500 mg/kg
	Species	
	Method	Expert judgement

benzyl alcohol 100-51-6	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rabbit
	Method	not specified

Skin corrosion/irritation:

Aluminium oxide - non fibrous form 1344-28-1	Result	not irritating
	Exposure time	24 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2,2'-iminodiethylamine 111-40-0	Result	corrosive
	Exposure time	15 min
	Species	rabbit
	Method	BASF Test
4-nonylphenol, branched 84852-15-3	Result	Category 1B (corrosive)
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Silica, amorphous, fumed, cryst.-free 112945-52-5	Result	not irritating
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
3,6-diazaoctanethylenediamine 112-24-3	Result	corrosive
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2-piperazin-1-ylethylamine 140-31-8	Result	corrosive
	Exposure time	20 min
	Species	rabbit
	Method	not specified
benzyl alcohol 100-51-6	Result	not irritating
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

Aluminium oxide - non fibrous form 1344-28-1	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
2,2'-iminodiethylamine 111-40-0	Result	corrosive
	Exposure time	30 s
	Species	rabbit
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
benzyl alcohol 100-51-6	Result	irritating
	Exposure time	24 h
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

Aluminium oxide - non fibrous form 1344-28-1	Result	not sensitising
	Test type	Draize Test
	Species	guinea pig
	Method	Landsteiner & Jacobs Method
2,2'-iminodiethylamine 111-40-0	Result	sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
4,4'-Isopropylidenediphenol 80-05-7	Result	not sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 406 (Skin Sensitisation)
3,6-diazaoctanethylenediamine 112-24-3	Result	sensitising
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	equivalent or similar to OECD Guideline 406 (Skin Sensitisation)
2-piperazin-1-ylethylamine 140-31-8	Result	sensitising
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	equivalent or similar to OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	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)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Aluminium oxide - non fibrous form 1344-28-1	Result	positive without metabolic activation
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	positive without metabolic activation
	Type of study / Route of administration	in vitro mammalian cell micronucleus test
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 475 (Mammalian Bone Marrow Chromosome Aberration Test)
2,2'-iminodiethylamine 111-40-0	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)
2,2'-iminodiethylamine 111-40-0	Result	negative
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	with and without
	Method	Chromosome Aberration Test
2,2'-iminodiethylamine 111-40-0	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
2,2'-iminodiethylamine 111-40-0	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Result	negative
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	
	Method	not specified
Silica, amorphous, fumed, cryst.-free 112945-52-5	Result	negative
	Type of study / Route of administration	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro
	Metabolic activation / Exposure time	
	Method	not specified
4,4'-Isopropylidenediphenol 80-05-7	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without

	Method	not specified
3,6-diazaoctanethylenediamine 112-24-3	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)
3,6-diazaoctanethylenediamine 112-24-3	Result	negative
	Type of study / Route of administration	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 482 (Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells In Vitro)
3,6-diazaoctanethylenediamine 112-24-3	Result	negative
	Type of study / Route of administration	intraperitoneal
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
2-piperazin-1-ylethylamine 140-31-8	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)
2-piperazin-1-ylethylamine 140-31-8	Result	negative
	Type of study / Route of administration	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro
	Metabolic activation / Exposure time	with and without
	Method	not specified
2-piperazin-1-ylethylamine 140-31-8	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	not specified
2-piperazin-1-ylethylamine 140-31-8	Result	negative
	Type of study / Route of administration	intraperitoneal
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
benzyl alcohol 100-51-6	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)
benzyl alcohol 100-51-6	Result	negative
	Type of study / Route of administration	intraperitoneal
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Repeated dose toxicity:

Aluminium oxide - non fibrous form 1344-28-1	Result	NOAEL=>= 0.075 mg/l
	Route of application	inhalation: dust
	Exposure time / Frequency of treatment	6 months6 h/d, 5 d/week
	Species	rat
	Method	equivalent or similar to OECD Guideline 452 (Chronic Toxicity Studies)
Aluminium oxide - non fibrous form 1344-28-1	Result	NOAEL=113.36 mg/kg
	Route of application	oral: drinking water
	Exposure time / Frequency of treatment	364 dAd libitum (daily)
	Species	rat
	Method	OECD Guideline 452 (Chronic Toxicity Studies)
2,2'-iminodiethylamine 111-40-0	Result	NOAEL=70 - 80 mg/kg
	Route of application	oral: feed
	Exposure time / Frequency of treatment	90 ddaily
	Species	rat
	Method	not specified
2,2'-iminodiethylamine 111-40-0	Result	NOAEL=0.55 mg/l
	Route of application	inhalation: vapour
	Exposure time / Frequency of treatment	15 d6 h/d
	Species	rat
	Method	not specified
3,6-diazaoctanethylenediamine 112-24-3	Result	LOAEL=50 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	26 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
3,6-diazaoctanethylenediamine 112-24-3	Result	NOAEL=50 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	26 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
2-piperazin-1-ylethylamine 140-31-8	Result	NOAEL=2000 ppm
	Route of application	oral: drinking water
	Exposure time / Frequency of treatment	>= 28 ddaily
	Species	rat
	Method	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
benzyl alcohol 100-51-6	Result	NOAEL=400 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	13 weeksonce daily, 5 days/week
	Species	rat
	Method	equivalent or similar to OECD Guideline 408 (Repeated Dose 90-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:

Aluminium oxide - non fibrous form	Value type	LC50
	Value	Toxicity > Water solubility

1344-28-1	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Salmo trutta
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Aluminium oxide - non fibrous form 1344-28-1	Value type	EC50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Aluminium oxide - non fibrous form 1344-28-1	Value type	NOEC
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Aluminium oxide - non fibrous form 1344-28-1	Value type	EC0
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Bacteria
	Exposure time	
	Species	not specified
	Method	not specified
2,2'-iminodiethylamine 111-40-0	Value type	LC50
	Value	430 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Poecilia reticulata
	Method	EU Method C.1 (Acute Toxicity for Fish)
	Value type	NOEC
	Value	> 10 mg/l
	Acute Toxicity Study	Fish
	Exposure time	28 d
	Species	Gasterosteus aculeatus
	Method	OECD Guideline 210 (fish early lite stage toxicity test)
2,2'-iminodiethylamine 111-40-0	Value type	EC50
	Value	64.6 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	EU Method C.2 (Acute Toxicity for Daphnia)
2,2'-iminodiethylamine 111-40-0	Value type	EC50
	Value	1,164 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOEC
	Value	10 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-iminodiethylamine 111-40-0	Value type	NOEC
	Value	6 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	anaerobic bacteria
	Method	not specified
4-nonylphenol, branched 84852-15-3	Value type	LC50
	Value	0.135 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)

	Value type	NOEC
	Value	0.25 mg/l
	Acute Toxicity Study	Fish
	Exposure time	14 d
	Species	Leuciscus idus
	Method	OECD Guideline 204 (Fish, Prolonged Toxicity Test: 14-day Study)
	Value type	NOEC
	Value	0.006 mg/l
	Acute Toxicity Study	Fish
	Exposure time	91 d
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 210 (fish early lite stage toxicity test)
4-nonylphenol, branched 84852-15-3	Value type	EC50
	Value	0.035 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
4-nonylphenol, branched 84852-15-3	Value type	EC50
	Value	0.0563 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	not specified
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
4-nonylphenol, branched 84852-15-3	Value type	EC50
	Value	Toxicity > Water solubility
	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)
Silica, amorphous, fumed, cryst.-free 112945-52-5	Value type	LC50
	Value	> 10,000 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Brachydanio rerio (new name: Danio rerio)
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
4,4'-Isopropylidenediphenol 80-05-7	Value type	LC50
	Value	4.6 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
	Value type	LOEC
	Value	0.000372 mg/l
	Acute Toxicity Study	Fish
	Exposure time	300 d
	Species	Danio rerio
	Method	OECD Guideline 234 (Fish Sexual Development Test)
4,4'-Isopropylidenediphenol 80-05-7	Value type	EC50
	Value	0.885 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Acartia clausi
	Method	other guideline:
4,4'-Isopropylidenediphenol 80-05-7	Value type	EC50
	Value	3.73 mg/l
	Acute Toxicity Study	Algae
	Exposure time	96 h
	Species	other:
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC10
	Value	2.1 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)
4,4'-Isopropylidenediphenol 80-05-7	Value type	EC10
	Value	> 320 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	18 h

	Species	Pseudomonas putida
	Method	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
3,6-diazaoctanethylenediamine 112-24-3	Value type	LC50
	Value	570 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Poecilia reticulata
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
3,6-diazaoctanethylenediamine 112-24-3	Value type	EC50
	Value	31 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
3,6-diazaoctanethylenediamine 112-24-3	Value type	EC50
	Value	20 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
3,6-diazaoctanethylenediamine 112-24-3	Value type	EC0
	Value	137 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	30 min
	Species	Pseudomonas putida
	Method	DIN 38412, part 27 (Bacterial oxygen consumption test)
2-piperazin-1-ylethylamine 140-31-8	Value type	LC50
	Value	> 100 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Salmo gairdneri (new name: Oncorhynchus mykiss)
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
2-piperazin-1-ylethylamine 140-31-8	Value type	EC50
	Value	32 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2-piperazin-1-ylethylamine 140-31-8	Value type	NOEC
	Value	31 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC50
	Value	495 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-piperazin-1-ylethylamine 140-31-8	Value type	EC10
	Value	100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	17 h
	Species	
	Method	not specified
Benzyldimethylamine 103-83-3	Value type	LC50
	Value	37.8 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Benzyldimethylamine 103-83-3	Value type	EC50
	Value	> 100 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	EU Method C.2 (Acute Toxicity for Daphnia)
Benzyldimethylamine 103-83-3	Value type	EC50
	Value	1.34 mg/l

	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)
	Method	EU Method C.3 (Algal Inhibition test)
	Value type	NOEC
	Value	0.24 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)
	Method	EU Method C.3 (Algal Inhibition test)
Benzyldimethylamine 103-83-3	Value type	EC10
	Value	534 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	17 h
	Species	Pseudomonas putida
	Method	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
benzyl alcohol 100-51-6	Value type	LC50
	Value	460 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas
	Method	EPA OPP 72-1 (Fish Acute Toxicity Test)
benzyl alcohol 100-51-6	Value type	EC50
	Value	230 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
benzyl alcohol 100-51-6	Value type	EC50
	Value	770 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOEC
	Value	310 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
benzyl alcohol 100-51-6	Value type	EC10
	Value	658 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	17 h
	Species	Pseudomonas putida
	Method	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)

Persistence and degradability:

2,2'-iminodiethylamine 111-40-0	Result	inherently biodegradable
	Route of application	aerobic
	Degradability	83 %
	Method	EU Method C.9 (Biodegradation: Zahn-Wellens Test)
	Result	readily biodegradable
	Route of application	aerobic
	Degradability	87 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
4-nonylphenol, branched 84852-15-3	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	48.2 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
4,4'-Isopropylidenediphenol 80-05-7	Result	readily biodegradable
	Route of application	aerobic
	Degradability	89 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
3,6-diazaoctanethylenediamine 112-24-3	Result	not inherently biodegradable
	Route of application	aerobic
	Degradability	0 %

	Method	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
2-piperazin-1-ylethylamine 140-31-8	Result	under test conditions no biodegradation observed
	Route of application	aerobic
	Degradability	0 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Benzyldimethylamine 103-83-3	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0 - 2 %
	Method	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))
benzyl alcohol 100-51-6	Result	readily biodegradable
	Route of application	aerobic
	Degradability	92 - 96 %
	Method	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))

Bioaccumulative potential / Mobility in soil:

2,2'-iminodiethylamine 111-40-0	Bioconcentration factor (BCF)	> 0.3 - < 6.3
	Exposure time	42 d
	Species	Cyprinus carpio
	Temperature	
	Method	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)
2,2'-iminodiethylamine 111-40-0	LogPow	-1.58
	Temperature	20 °C
	Method	QSAR (Quantitative Structure Activity Relationship)
4-nonylphenol, branched 84852-15-3	Bioconcentration factor (BCF)	231
	Exposure time	14 d
	Species	Lepomis macrochirus
	Temperature	
	Method	other guideline:
4-nonylphenol, branched 84852-15-3	LogPow	5.4
	Temperature	23 °C
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
4,4'-Isopropylidenediphenol 80-05-7	Bioconcentration factor (BCF)	5.1 - 67
	Exposure time	42 d
	Species	Cyprinus carpio
	Temperature	25 °C
	Method	other guideline:
4,4'-Isopropylidenediphenol 80-05-7	LogPow	3.4
	Temperature	21.5 °C
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
3,6-diazaoctanethylenediamine 112-24-3	LogPow	-2.65
	Temperature	
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
2-piperazin-1-ylethylamine 140-31-8	LogPow	-1.48
	Temperature	
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Benzyldimethylamine 103-83-3	Bioconcentration factor (BCF)	> 2.1 - 22
	Exposure time	42 d
	Species	Cyprinus carpio
	Temperature	
	Method	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)
Benzyldimethylamine 103-83-3	LogPow	1.98
	Temperature	
	Method	EU Method A.8 (Partition Coefficient)
benzyl alcohol 100-51-6	LogPow	1.05
	Temperature	20 °C
	Method	EU Method A.8 (Partition Coefficient)

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:	8
Packing group:	III
Classification code:	C7
Hazard ident. number:	80
UN no.:	3267
Label:	8
Technical name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Diethylenetriamine,Nonylphenol)

Railroad transport RID:

Class:	8
Packing group:	III
Classification code:	C7
Hazard ident. number:	80
UN no.:	3267
Label:	8
Technical name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Diethylenetriamine,Nonylphenol)

Inland water transport ADN:

Class:	8
Packing group:	III
Classification code:	C7
Hazard ident. number:	80
UN no.:	3267
Label:	8
Technical name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Diethylenetriamine,Nonylphenol)

Marine transport IMDG:

Class:	8
Packing group:	III
UN no.:	3267
Label:	8
EmS:	F-A ,S-B
Seawater pollutant:	Marine pollutant
Proper shipping name:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Diethylenetriamine,Nonylphenol)

Air transport IATA:

Class:	8
Packing group:	III
Packaging instructions (passenger):	852
Packaging instructions (cargo):	856
UN no.:	3267
Label:	8
Proper shipping name:	Corrosive liquid, basic, organic, n.o.s. (Diethylenetriamine,Nonylphenol)

Section 15. Regulatory information

Regulatory Information: Workplace Safety And Health Act (Chapter 354A, Section 40B) Workplace Safety And Health (Approved Codes of Practice) Notification 2020.
Workplace Safety And Health Act (Chapter 354A, Section 65) Workplace Safety And Health (General Provisions) (Amendment No.2) Regulations 2024

Global inventory status:

Regulatory list	Notification
TSCA	yes
AIIC	yes
DSL	yes
ENCS (JP)	yes
ISHL (JP)	yes
KECI (KR)	yes
PICCS (PH)	yes
IECSC	yes

Section 16. Other information

Disclaimer: This Safety Data Sheet has been generated based on Workplace Safety And Health Act (Chapter 354A, Section 40B) Workplace Safety And Health (Approved Codes of Practice) Notification 2020 and Workplace Safety And Health Act (Chapter 354A, Section 65) Workplace Safety And Health (General Provisions) (Amendment No.2) Regulations 2024 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.
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