

SAFETY DATA SHEET

Microbond PD955M 36G S3

Version
10.0

Revision Date:
15.02.2023

Date of last issue: 31.08.2021
Date of first issue: 26.11.2015

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

1.1 Product identifier

Trade name : Microbond PD955M 36G S3
Product code : 5176686

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

Use of the Substance/Mixture : Electrical industry and electronics, Industrial use

1.3 Details of the supplier of the safety data sheet

Company : Heraeus Electronics GmbH & Co. KG
Heraeusstrasse 12-14
63450 Hanau
E-mail address of person responsible for the SDS : sds@heraeus.com
(Heraeus Holding: EHS Chemical Safety)

1.4 Emergency telephone number

Emergency telephone number : +49 6132-84463
International Emergency Number
This telephone number is available 24 hours per day, 7 days per week.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Germ cell mutagenicity, Category 2	H341: Suspected of causing genetic defects.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)


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Hazard pictograms	:	
Signal word	:	Warning
Hazard statements	:	H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H341 Suspected of causing genetic defects. H411 Toxic to aquatic life with long lasting effects.
Precautionary statements	:	Prevention: P201 Obtain special instructions before use. P261 Avoid breathing mist or vapours. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing 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.

Hazardous components which must be listed on the label:

Bisphenol-F-epichlorhydrin-epoxy resin
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane
2,3-epoxypropyl neodecanoate
4,4'-isopropylidenediphenol
2,3-epoxypropyl phenyl ether

Additional Labelling

EUH205 Contains epoxy constituents. May produce an allergic reaction.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : organic

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Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Bisphenol-F-epichlorhydrin-epoxy resin	9003-36-5 500-006-8	Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Chronic 2; H411	>= 30 - < 50
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3 216-823-5 603-073-00-2	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411 specific concentra- tion limit Eye Irrit. 2; H319 >= 5 % Skin Irrit. 2; H315 >= 5 %	>= 10 - < 20
2,3-epoxypropyl neodecanoate	26761-45-5 247-979-2	Skin Sens. 1; H317 Muta. 2; H341 Aquatic Chronic 2; H411	>= 10 - < 20
4,4'-isopropylidenediphenol	80-05-7 201-245-8 604-030-00-0	Eye Dam. 1; H318 Skin Sens. 1; H317 Repr. 1B; H360F STOT SE 3; H335 Aquatic Chronic 2; H411	>= 0.1 - < 0.25
2,3-epoxypropyl phenyl ether	122-60-1 204-557-2 603-067-00-X	Acute Tox. 4; H302 Acute Tox. 4; H332 Acute Tox. 4; H312 Skin Irrit. 2; H315 Skin Sens. 1A; H317 Muta. 2; H341 Carc. 1B; H350 STOT SE 3; H335 Aquatic Chronic 3; H412	>= 0.0025 - < 0.025

For explanation of abbreviations see section 16.

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SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : First aider needs to protect himself.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
- If inhaled : Move to fresh air.
Get medical attention.
- In case of skin contact : Take off all contaminated clothing immediately.
Wash off with:
Polyethylene glycol 400.
Obtain medical attention.
- In case of eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Keep eye wide open while rinsing.
Protect unharmed eye.
Call a physician immediately.
- If swallowed : Immediately give large quantities of water to drink.
Do NOT induce vomiting.
Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

- Risks : Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Suspected of causing genetic defects.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Treat symptomatically.
-

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

- Specific hazards during fire-fighting : Exposure to decomposition products may be a hazard to health.
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Hazardous combustion products : Carbon oxides
Silicon oxides
Metal oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : Use a water spray to cool fully closed containers.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Follow safe handling advice and personal protective equipment recommendations.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Do not allow contact with soil, surface or ground water.
Do not let product enter drains.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Wear personal protective equipment.

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Hygiene measures : Avoid inhalation, ingestion and contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area.
: Keep away from food and drink. Wash hands before breaks and at the end of workday. Keep working clothes separately. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep tightly closed in a dry, cool and well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
4,4'-isopropylidenediphenol	80-05-7	TWA	2 mg/m ³	GB EH40
		TWA (inhalable fraction)	2 mg/m ³	2017/164/EU
Further information: Indicative				

Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value
Bisphenol-F-epichlorhydrin-epoxy resin	Workers	Inhalation	Long-term systemic effects	29.39 mg/m ³
	Workers	Skin contact	Long-term systemic effects	104.15 mg/kg bw/day
	Workers	Skin contact	Acute local effects	0.0083 mg/cm ²
	Consumers	Inhalation	Long-term systemic effects	8.7 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	62.5 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	6.25 mg/kg bw/day
2,2'-(1-	Workers	Inhalation	Long-term systemic	12.25 mg/m ³

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methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane			effects	
	Workers	Inhalation	Acute systemic effects	12.25 mg/m ³
	Workers	Skin contact	Long-term systemic effects	8.33 mg/kg bw/day
	Workers	Skin contact	Acute systemic effects	8.33 mg/kg bw/day
	Consumers	Skin contact	Long-term systemic effects	3.571 mg/kg bw/day
	Consumers	Skin contact	Acute systemic effects	3.571 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	0.75 mg/kg bw/day
	Consumers	Ingestion	Acute systemic effects	0.75 mg/kg bw/day
2,3-epoxypropyl neodecanoate	Workers	Inhalation	Long-term systemic effects	2.7 mg/m ³
	Workers	Inhalation	Acute systemic effects	10.4 mg/m ³
	Workers	Skin contact	Long-term systemic effects	1.9 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	1.6 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	1.15 mg/kg bw/day
4,4'-isopropylidenediphenol	Workers	Inhalation	Long-term systemic effects	2 mg/m ³
	Workers	Inhalation	Acute systemic effects	2 mg/m ³
	Workers	Inhalation	Long-term local effects	2 mg/m ³
	Workers	Inhalation	Acute local effects	2 mg/m ³
	Workers	Skin contact	Long-term systemic effects	0.031 mg/kg bw/day
	Workers	Skin contact	Acute systemic effects	0.031 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	1 mg/m ³
	Consumers	Inhalation	Acute systemic effects	1 mg/m ³
	Consumers	Inhalation	Long-term local effects	1 mg/m ³
	Consumers	Inhalation	Acute local effects	1 mg/m ³
	Consumers	Skin contact	Long-term systemic	0.002 mg/kg

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	Consumers	Skin contact	effects Acute systemic effects	bw/day 0.002 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	0.004 mg/kg bw/day
	Consumers	Ingestion	Acute systemic effects	0.004 mg/kg bw/day

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
Bisphenol-F-epichlorhydrin-epoxy resin	Fresh water	0.003 mg/l
	Marine water	0.0003 mg/l
	Intermittent use/release	0.0254 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	0.294 mg/kg
	Marine sediment	0.0294 mg/kg
	Soil	0.237 mg/kg
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Fresh water	0.006 mg/l
	Freshwater - intermittent	0.018 mg/l
	Marine water	0.001 mg/l
	Marine water - intermittent	0.002 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	0.996 mg/kg dry weight (d.w.)
	Marine sediment	0.1 mg/kg dry weight (d.w.)
2,3-epoxypropyl neodecanoate	Soil	0.196 mg/kg dry weight (d.w.)
	Secondary Poisoning	11 mg/kg food
	Fresh water	0.001 mg/l
	Marine sediment	0.00012 mg/l
	Intermittent use/release	0.012 mg/l
	Sewage treatment plant	50 mg/l
	Fresh water sediment	0.012 mg/kg
4,4'-isopropylidenediphenol	Marine sediment	0.0002 mg/kg
	Fresh water	0.018 mg/l
	Marine water	0.018 mg/l
	Intermittent use/release	0.011 mg/l
	Sewage treatment plant	320 mg/l
	Fresh water sediment	1.2 mg/kg
	Marine sediment	0.24 mg/kg
2,3-epoxypropyl phenyl ether	Soil	3.7 mg/kg
	Fresh water	0.043 mg/l
	Freshwater - intermittent	0.43 mg/l
	Marine water	0.004 mg/l

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	Fresh water sediment	0.331 mg/kg dry weight (d.w.)
	Marine sediment	0.033 mg/kg dry weight (d.w.)
	Soil	0.041 mg/kg dry weight (d.w.)

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Safety glasses with side-shields
Hand protection

Remarks : Before removing gloves clean them with soap and water. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and has to be tested before use.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : paste
Colour : red
Odour : mild
Odour Threshold : No data available

pH : Not applicable

Melting point/range : No data available

Boiling point/boiling range : > 200 °C (1,013 hPa)

Flash point : > 100 °C(1,013 hPa)

Evaporation rate : No data available

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Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	<= 1,100 hPa (50 °C)
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	1.188 g/cm ³ (23 °C, 1,013 hPa)
Solubility(ies)		
Water solubility	:	insoluble (20 °C, 1,013 hPa)
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	1,000 mPa.s (23 °C)
Viscosity, kinematic	:	> 40 mm ² /s (23 °C) > 20.5 mm ² /s (40 °C)
Explosive properties	:	Not applicable
Oxidizing properties	:	Not applicable

9.2 Other information

Particle size	:	Not applicable
Self-ignition	:	Not applicable

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SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

No data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

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

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402

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Assessment: The substance or mixture has no acute dermal toxicity

Remarks: Based on data from similar materials

2,3-epoxypropyl neodecanoate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 0.24 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

4,4'-isopropylidenediphenol:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 0.17 mg/l
Exposure time: 6 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): 2,230 mg/kg

2,3-epoxypropyl phenyl ether:

Acute oral toxicity : LD50 (Mouse, male): 1,400 mg/kg

Acute inhalation toxicity : **Acute toxicity estimate: 11 mg/l**
Exposure time: 4 h
Test atmosphere: vapour
Method: **Expert judgement**
Remarks: **Based on national or regional regulation.**

Acute dermal toxicity : LD50 (Rabbit, male): 1,666 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Species : Rabbit

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Result : Skin irritation

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

Result : Skin irritation
Remarks : Based on national or regional regulation.

2,3-epoxypropyl neodecanoate:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

4,4'-isopropylidenediphenol:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

2,3-epoxypropyl phenyl ether:

Result : Skin irritation
Remarks : Based on national or regional regulation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Species : Rabbit
Result : No eye irritation

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

Result : Irritation to eyes, reversing within 21 days
Remarks : Based on national or regional regulation.

2,3-epoxypropyl neodecanoate:

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation

4,4'-isopropylidenediphenol:

Species : Rabbit
Method : OECD Test Guideline 405
Result : Irreversible effects on the eye

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Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Test Type : Local lymph node assay (LLNA)
Exposure routes : Skin contact
Species : Mouse
Method : OECD Test Guideline 429
Result : positive

Assessment : Probability or evidence of skin sensitisation in humans

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

Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : positive

Assessment : Probability or evidence of skin sensitisation in humans

2,3-epoxypropyl neodecanoate:

Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : positive

Assessment : Probability or evidence of skin sensitisation in humans

4,4'-isopropylidenediphenol:

Assessment : Probability or evidence of skin sensitisation in humans
Remarks : Based on national or regional regulation.

2,3-epoxypropyl phenyl ether:

Test Type : Human repeat insult patch test (HRIPT)
Exposure routes : Skin contact
Species : Humans
Result : positive

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Assessment : Probability or evidence of high skin sensitisation rate in humans

Germ cell mutagenicity

Suspected of causing genetic defects.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: positive

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Genotoxicity in vivo : Test Type: Mammalian spermatogonial chromosome aberration test (in vivo)
Species: Hamster
Application Route: Ingestion
Result: negative

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

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

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: equivocal

Test Type: Chromosome aberration test in vitro
Result: positive

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Result: negative

2,3-epoxypropyl neodecanoate:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: positive

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- Genotoxicity in vivo : Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
- Genotoxicity in vivo : Test Type: Transgenic rodent somatic cell gene mutation assay
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 488
Result: positive
- Genotoxicity in vivo : Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 486
Result: negative
- Germ cell mutagenicity- Assessment : Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.
- 4,4'-isopropylidenediphenol:**
- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
- Genotoxicity in vivo : Test Type: Chromosome aberration test in vitro
Species: Mouse
Application Route: Ingestion
Result: negative
- 2,3-epoxypropyl phenyl ether:**
- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: positive
- Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: positive
- Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Result: negative
- Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Result: negative
- Germ cell mutagenicity- Assessment : Positive results from in vitro mammalian mutagenicity assays, chemical structure activity relationship to known germ cell

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mutagens

Carcinogenicity

Not classified based on available information.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Species : Mouse
Application Route : Skin contact
Exposure time : 104 weeks
Result : negative

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

Species : Rat
Application Route : Ingestion
Exposure time : 24 Months
Method : OECD Test Guideline 453
Result : negative

Species : Mouse
Application Route : Skin contact
Exposure time : 24 Months
Method : OECD Test Guideline 453
Result : negative

4,4'-isopropylidenediphenol:

Species : Rat
Application Route : Ingestion
Exposure time : 103 weeks
Result : negative

2,3-epoxypropyl phenyl ether:

Species : Rat
Application Route : inhalation (vapour)
Exposure time : 2 Years
Result : positive

Carcinogenicity - Assessment : Sufficient evidence of carcinogenicity in animal experiments

Reproductive toxicity

Not classified based on available information.

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

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Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rabbit
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

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

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rabbit
Application Route: Skin contact
Result: negative

4,4'-isopropylidenediphenol:

Effects on fertility : Test Type: Three-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: positive

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

2,3-epoxypropyl phenyl ether:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapour)
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat

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Application Route: inhalation (vapour)
Result: negative

STOT - single exposure

Not classified based on available information.

Components:

4,4'-isopropylidenediphenol:

Assessment : May cause respiratory irritation.

2,3-epoxypropyl phenyl ether:

Assessment : May cause respiratory irritation.

STOT - repeated exposure

Not classified based on available information.

Components:

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

Assessment : No significant health effects observed in animals at concentrations of 200 mg/kg bw or less.

Repeated dose toxicity

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Species : Rat
NOAEL : 250 mg/kg
Application Route : Ingestion
Exposure time : 13 Weeks
Method : OECD Test Guideline 408

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

Species : Rat
NOAEL : 50 mg/kg
LOAEL : 250 mg/kg
Application Route : Ingestion
Exposure time : 90 Days
Method : OECD Test Guideline 408

Species : Mouse
NOAEL : >= 100 mg/kg
Application Route : Skin contact
Exposure time : 13 Weeks
Method : OECD Test Guideline 411

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2,3-epoxypropyl neodecanoate:

Species : Rat
NOAEL : 5000 ppm
Application Route : Ingestion
Exposure time : 5 Weeks

4,4'-isopropylidenediphenol:

Species : Rat
LOAEL : 120 mg/kg
Application Route : Ingestion
Exposure time : 2 yr

Aspiration toxicity

Not classified based on available information.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 62.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h

Toxicity to microorganisms : IC50 : > 100 mg/l
Exposure time: 3 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.3 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

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

Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): > 1 - 10 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 203

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Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EL50 (*Daphnia magna* (Water flea)): > 1 - 10 mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EL50 (*Scenedesmus capricornutum* (fresh water algae)): > 10 - 100 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

NOELR (*Scenedesmus capricornutum* (fresh water algae)): > 1 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Toxicity to microorganisms : IC50 : > 100 mg/l
Exposure time: 3 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: > 0.1 - 1 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Remarks: Based on data from similar materials

2,3-epoxypropyl neodecanoate:

Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 5 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 4.8 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata* (green algae)): 2.9 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC : 500 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

4,4'-isopropylidenediphenol:

Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): 4.6 mg/l

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		Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 10.2 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 2.73 mg/l Exposure time: 96 h
		EC10 (Pseudokirchneriella subcapitata (green algae)): 1.36 mg/l Exposure time: 96 h
Toxicity to microorganisms	:	EC10 (Pseudomonas putida): > 320 mg/l Exposure time: 18 h
Toxicity to fish (Chronic toxicity)	:	NOEC: 100 µg/l Exposure time: 49 d Species: Cyprinus carpio (Carp)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0.37 mg/l Exposure time: 28 d Species: Mysidopsis bahia (opossum shrimp) Method: OPPTS 850.1350
2,3-epoxypropyl phenyl ether:		
Toxicity to fish	:	LC50 (Carassius auratus (goldfish)): 43 mg/l Exposure time: 96 h

12.2 Persistence and degradability

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: Regulation (EC) No. 440/2008, Annex, C.4-E

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

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

2,3-epoxypropyl neodecanoate:

Biodegradability : Result: Not readily biodegradable.

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Biodegradation: 7 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

4,4'-isopropylidenediphenol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 89 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

2,3-epoxypropyl phenyl ether:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 51 %
Exposure time: 28 d

12.3 Bioaccumulative potential

Components:

Bisphenol-F-epichlorhydrin-epoxy resin:

Partition coefficient: n- : log Pow: 3.6
octanol/water

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

Partition coefficient: n- : log Pow: 3.5
octanol/water

2,3-epoxypropyl neodecanoate:

Partition coefficient: n- : log Pow: 4.4
octanol/water

4,4'-isopropylidenediphenol:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 5.1 - 67

Partition coefficient: n- : log Pow: 3.4
octanol/water

2,3-epoxypropyl phenyl ether:

Partition coefficient: n- : log Pow: 1.61
octanol/water
Remarks: Calculation

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential : This substance/mixture contains components considered to have endocrine disrupting properties for environment, according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Components:

4,4'-isopropylidenediphenol:

Endocrine disrupting potential : The substance is considered to have endocrine disrupting properties according to REACH Article 57(f) for the environment.

Global warming potential

Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) of the United Nations Framework Convention on Climate Change (UNFCCC)

Components:

decamethylcyclopentasiloxane:

20-year global warming potential: 1.04
100-year global warming potential: 0.289
500-year global warming potential: 0.082
Atmospheric lifetime: 0.016 yr
Radiative efficiency: 0.098 Wm²ppb
Further information: Miscellaneous compounds

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging : Dispose of as unused product.

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SECTION 14: Transport information

14.1 UN number

ADN : UN 3082
ADR : UN 3082
RID : UN 3082
IMDG : UN 3082
IATA : UN 3082

14.2 UN proper shipping name

ADN : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Bisphenol-F-epichlorhydrin-epoxy resin, Bis-[4-(2,3-epoxipropoxi)phenyl]propane)

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Bisphenol-F-epichlorhydrin-epoxy resin, Bis-[4-(2,3-epoxipropoxi)phenyl]propane)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Bisphenol-F-epichlorhydrin-epoxy resin, Bis-[4-(2,3-epoxipropoxi)phenyl]propane)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Bisphenol-F-epichlorhydrin-epoxy resin, Bis-[4-(2,3-epoxipropoxi)phenyl]propane)

IATA : Environmentally hazardous substance, liquid, n.o.s.
(Bisphenol-F-epichlorhydrin-epoxy resin, Bis-[4-(2,3-epoxipropoxi)phenyl]propane)

14.3 Transport hazard class(es)

ADN : 9
ADR : 9
RID : 9
IMDG : 9
IATA : 9

14.4 Packing group

ADN
Packing group : III

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Classification Code : M6
Hazard Identification Number : 90
Labels : 9

ADR

Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9
Tunnel restriction code : (-)

RID

Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9

IMDG

Packing group : III
Labels : 9
EmS Code : F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft) : 964
Packing instruction (LQ) : Y964
Packing group : III
Labels : Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft) : 964
Packing instruction (LQ) : Y964
Packing group : III
Labels : Miscellaneous

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : yes

RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

IATA (Passenger)

Environmentally hazardous : yes

IATA (Cargo)

Environmentally hazardous : yes

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14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 3 4,4'-isopropylidenediphenol (Number on list 66, 30)
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UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	4,4'-isopropylidenediphenol
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The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
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UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
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Storage class (TRGS 510)	:	10: Combustible liquids
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Control of Major Accident Hazards Regulations 2015 (COMAH)	E2	ENVIRONMENTAL HAZARDS
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15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H312	:	Harmful in contact with skin.
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.

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H335	:	May cause respiratory irritation.
H341	:	Suspected of causing genetic defects.
H350	:	May cause cancer.
H360F	:	May damage fertility.
H411	:	Toxic to aquatic life with long lasting effects.
H412	:	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Carc.	:	Carcinogenicity
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Muta.	:	Germ cell mutagenicity
Repr.	:	Reproductive toxicity
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
STOT SE	:	Specific target organ toxicity - single exposure
2017/164/EU	:	Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2017/164/EU / TWA	:	Limit Value - eight hours
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Re-

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striction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:

Skin Irrit. 2	H315
Eye Irrit. 2	H319
Skin Sens. 1	H317
Muta. 2	H341
Aquatic Chronic 2	H411

Classification procedure:

Calculation method
Calculation method
Calculation method
Calculation method
Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GB / EN