

## SAFETY DATA SHEET

### Microbond PD955M 13G S2

Version  
11.0

Revision Date:  
08.01.2024

Date of last issue: 15.02.2023  
Date of first issue: 23.03.2017

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

### 1.1 Product identifier

Trade name : Microbond PD955M 13G S2  
Product code : 5176642

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

Use of the Sub-  
stance/Mixture : Electrical industry and electronics, Industrial use  
≤ 5 L  
Recommended restrictions : For industrial use only.  
on 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 : [sds@heraeus.com](mailto:sds@heraeus.com)  
responsible for the SDS (Heraeus Business Solutions GmbH: EHS Chemical Safety)

### 1.4 Emergency telephone number

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

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## 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.

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#### 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)

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  
Bis-[4-(2,3-epoxipropoxy)phenyl]propane  
2,3-Epoxypropyl neodecanoate  
Bisphenol A  
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.

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## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Chemical nature : organic

#### 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
Bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3 216-823-5 603-073-00-2	Skin Irrit. 2; H315 <b>Eye Irrit. 2; H319</b> 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
Bisphenol A	80-05-7 201-245-8 604-030-00-0	Eye Dam. 1; H318 <b>Skin Sens. 1; H317</b> Repr. 1B; H360F STOT SE 3; H335 <b>Aquatic Acute 1; H400</b> Aquatic Chronic 1; H410  M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 10	>= 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	>= 0.0025 - < 0.025

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		Skin Irrit. 2; H315 Skin Sens. 1A; H317 Muta. 2; H341 Carc. 1B; H350 STOT SE 3; H335 Aquatic Chronic 3; H412	
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For explanation of abbreviations see section 16.

## 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.

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## 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.

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.

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## 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).

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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. Avoid inhalation, ingestion and contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area.
- Hygiene measures : 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
Bisphenol A	80-05-7	TWA	2 mg/m <sup>3</sup>	GB EH40
		TWA (inhalable fraction)	2 mg/m <sup>3</sup>	2017/164/EU
Further information: Indicative				
		TWA (inhalable fraction)	2 mg/m <sup>3</sup>	2004/37/EC
Further information: Carcinogens or mutagens				

##### Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value

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Bisphenol-F-epichlorhydrin-epoxy resin	Workers	Inhalation	Long-term systemic effects	29.39 mg/m <sup>3</sup>
	Workers	Skin contact	Long-term systemic effects	104.15 mg/kg bw/day
	Workers	Skin contact	Acute local effects	0.0083 mg/cm <sup>2</sup>
	Consumers	Inhalation	Long-term systemic effects	8.7 mg/m <sup>3</sup>
	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
Bis-[4-(2,3-epoxipropoxy)phenyl]propane	Workers	Inhalation	Long-term systemic effects	12.25 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	12.25 mg/m <sup>3</sup>
	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 <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	10.4 mg/m <sup>3</sup>
	Workers	Skin contact	Long-term systemic effects	1.9 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	1.6 mg/m <sup>3</sup>
	Consumers	Skin contact	Long-term systemic effects	1.15 mg/kg bw/day
Bisphenol A	Workers	Inhalation	Long-term systemic effects	2 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	2 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term local effects	2 mg/m <sup>3</sup>
	Workers	Inhalation	Acute local effects	2 mg/m <sup>3</sup>

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	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/m3
	Consumers	Inhalation	Acute systemic effects	1 mg/m3
	Consumers	Inhalation	Long-term local effects	1 mg/m3
	Consumers	Inhalation	Acute local effects	1 mg/m3
	Consumers	Skin contact	Long-term systemic effects	0.002 mg/kg bw/day
	Consumers	Skin contact	Acute systemic effects	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
Bis-[4-(2,3-epoxypropoxy)phenyl]propane	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.)
	Soil	0.196 mg/kg dry weight (d.w.)
	Secondary Poisoning	11 mg/kg food
2,3-Epoxypropyl neodecanoate	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



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	Marine sediment	0.0002 mg/kg
Bisphenol A	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
	Soil	3.7 mg/kg
2,3-Epoxypropyl phenyl ether	Fresh water	0.043 mg/l
	Freshwater - intermittent	0.43 mg/l
	Marine water	0.004 mg/l
	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

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Odour Threshold	:	No data available
pH	:	substance/mixture is non-soluble (in water)
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
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 <sup>3</sup> (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 <sup>2</sup> /s (23 °C) > 20.5 mm <sup>2</sup> /s (40 °C)
Explosive properties	:	Not applicable
Oxidizing properties	:	Not applicable

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#### 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

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### 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

##### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

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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  
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

#### **Bisphenol A:**

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

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#### Skin corrosion/irritation

Causes skin irritation.

#### Components:

##### **Bisphenol-F-epichlorhydrin-epoxy resin:**

Species : Rabbit  
Result : Skin irritation

##### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

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

##### **Bisphenol A:**

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

##### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

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

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#### **Bisphenol A:**

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

#### **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

##### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

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

#### **Bisphenol A:**

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

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#### 2,3-Epoxypropyl phenyl ether:

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

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.

##### Bis-[4-(2,3-epoxypropoxy)phenyl]propane:

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

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#### 2,3-Epoxypropyl neodecanoate:

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

#### Bisphenol A:

- 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
- Test Type: In vitro mammalian cell gene mutation test  
Result: positive
- Test Type: Chromosome aberration test in vitro  
Result: negative
- Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse



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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 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

##### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

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

##### **Bisphenol A:**

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

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#### Reproductive toxicity

Not classified based on available information.

#### Components:

##### **Bisphenol-F-epichlorhydrin-epoxy resin:**

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

##### **Bis-[4-(2,3-epoxypropoxy)phenyl]propane:**

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

##### **Bisphenol A:**

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

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Species: Rat  
Application Route: inhalation (vapour)  
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development  
Species: Rat  
Application Route: inhalation (vapour)  
Result: negative

#### STOT - single exposure

Not classified based on available information.

#### Components:

##### Bisphenol A:

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:

##### Bis-[4-(2,3-epoxypropoxy)phenyl]propane:

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

##### Bis-[4-(2,3-epoxypropoxy)phenyl]propane:

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

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

#### 2,3-Epoxypropyl neodecanoate:

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

#### Bisphenol A:

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

#### Aspiration toxicity

Not classified based on available information.

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## 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)

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#### **Bis-[4-(2,3-epoxipropoxy)phenyl]propane:**

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  
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

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Exposure time: 3 h  
Method: OECD Test Guideline 209

#### **Bisphenol A:**

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 4.6 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 : 0.885 mg/l  
Exposure time: 48 h  
Method: ISO 14669 and PARCOM method
- 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
- M-Factor (Acute aquatic toxicity) : 1
- Toxicity to microorganisms : EC10 (Pseudomonas putida): > 320 mg/l  
Exposure time: 18 h
- Toxicity to fish (Chronic toxicity) : NOEC: 0.000174 mg/l  
Exposure time: 150 d  
Species: Danio rerio (zebra fish)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.0194 mg/l  
Exposure time: 28 d
- M-Factor (Chronic aquatic toxicity) : 10

#### **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

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#### **Bis-[4-(2,3-epoxypropoxy)phenyl]propane:**

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

#### **Bisphenol A:**

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

##### **Bis-[4-(2,3-epoxypropoxy)phenyl]propane:**

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

##### **2,3-Epoxypropyl neodecanoate:**

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

##### **Bisphenol A:**

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

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

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#### 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:

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:

##### **Bisphenol A:**

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 Wm<sup>2</sup>ppb  
Further information: Miscellaneous compounds



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#### 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.
- 

#### SECTION 14: Transport information

##### 14.1 UN number

- ADN : Not regulated as a dangerous good
- ADR : Not regulated as a dangerous good
- RID : Not regulated as a dangerous good
- IMDG : Not regulated as a dangerous good
- IATA : Not regulated as a dangerous good

##### 14.2 UN proper shipping name

- ADN : Not regulated as a dangerous good
- ADR : Not regulated as a dangerous good
- RID : Not regulated as a dangerous good
- IMDG : Not regulated as a dangerous good
- IATA : Not regulated as a dangerous good

##### 14.3 Transport hazard class(es)

- ADN : Not regulated as a dangerous good
- ADR : Not regulated as a dangerous good
- RID : Not regulated as a dangerous good
- IMDG : Not regulated as a dangerous good
- IATA : Not regulated as a dangerous good

##### 14.4 Packing group

- ADN : Not regulated as a dangerous good
- ADR : Not regulated as a dangerous good
- RID : Not regulated as a dangerous good
- IMDG : Not regulated as a dangerous good
- IATA (Cargo) : Not regulated as a dangerous good
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**IATA (Passenger)** : Not regulated as a dangerous good

#### 14.5 Environmental hazards

Not regulated as a dangerous good

#### 14.6 Special precautions for user

Remarks : When carried in single packaging or inner packaging of 5kg/5L or less, this material is not subject to the transport regulations, the single packaging or inner packaging must not be UN-approved but must be a good quality packaging and suitable for the medium.

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

Not applicable for product as supplied.

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### 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  
Bisphenol A (Number on list 66, 30)

UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation : Bisphenol A

The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain) : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

UK REACH List of substances subject to authorisation (Annex XIV) : Not applicable

Storage class (TRGS 510) : 10: Combustible liquids

Control of Major Accident Hazards Regulations 2015 (COMAH) E2 ENVIRONMENTAL HAZARDS

#### 15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

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### SECTION 16: Other information

#### Full text of H-Statements

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

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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.
H335	: May cause respiratory irritation.
H341	: Suspected of causing genetic defects.
H350	: May cause cancer.
H360F	: May damage fertility.
H400	: Very toxic to aquatic life.
H410	: Very toxic to aquatic life with long lasting effects.
H411	: Toxic to aquatic life with long lasting effects.
H412	: Harmful to aquatic life with long lasting effects.

#### Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Acute	: Short-term (acute) aquatic hazard
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
2004/37/EC	: Europe. Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
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
2004/37/EC / TWA	: Long term exposure limit
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;

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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 Restriction 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

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