

TRIJECT FR 15C252A

Product Name:	TriJect FR 15C252A 1312647 Rev.5
Revision Date:	29-Aug-2023 According to Regulation (EC) No. 1907/2006

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name:	TriJect FR 15C252A
Chemical Name:	Unsaturated Polyester Resin
Pure Substance/Mixture:	Mixture

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

Resins for composites. Contact us before using for food contact application.

1.3. Details of the supplier of the safety data sheet

Tricel Composites (GB) Limited

Unit A, Foxway,
Off Atkinson Street,
Leeds, West Yorkshire,
LS10 1PS.
Tel: +44 (0)113 270 3133

Tricel Composites (NI) Limited

Unit 4, Milltown Ind. Estate, Greenan
Road. Warrenpoint, Newry
Co. Down,
BT34 3FN.
Tel: +44 (0)284 175 3738

1.4. Emergency Telephone Number

Emergency medical information: 8am-10pm (seven days) contact National Poisons Information Centre, Beaumont Hospital, Dublin 9 DOV2NO, Ireland.

Telephone Number: +353 (0)1 809 2166

Leeds:	Newry:
Tel: +44 (0)113 270 3133	Tel: +44 (0)284 175 3738

1.4.1. Poison Information Centre Telephone Number

European emergency phone number: 112

UK: National Poisons Emergency Number : 0344 892 0111

Ireland: National Poisons Information Centre (NPIC) Telephone Healthcare Professionals : +353 (01) 809 2566. (24 hour service) Telephone Members of Public: +353 (01) 809 2166. (8.00 a.m. to 10.00 p.m. 7 days a week)

2. Hazards Identification

2.1. Classification of the substance or mixture

Classification of the substance or mixture - GHS/CLP (n° 1272/2008)

Skin Corrosion/Irritation	Category 2 - (H315)
Serious Eye Damage/Eye Irritation	Category 2 - (H319)
Skin Sensitization	Category 1 - (H317)
Germ cell mutagenicity	Category 1B - (H340)
Reproductive Toxicity	Category 2 - (H361d)
Carcinogenicity	Category 1B - (H350)
Specific Target Organ Toxicity (Single Exposure)	Category 3 - (H335)
Specific target organ toxicity - repeated exposure	Category 1 - (H372)
Chronic Aquatic Toxicity	Category 3 - (H412)
Flammable liquids	Category 3 - (H226)

2.2. Label elements



Signal Word: Danger

Contains: Cobalt octoate, 2,2-bis(bromomethyl)propane-1,3-diol, Styrene

2.2.1. Hazard Statements

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H340 - May cause genetic defects

H350 - May cause cancer

H361d - Suspected of damaging the unborn child

H361d - Suspected of damaging the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

H412 - Harmful to aquatic life with long lasting effects

Physical Hazards

H226 - Flammable liquid and vapour

Additional EU H-Phrases

EUH208 - Contains phthalic anhydride, 1-hydroxy-4-(p-toluidino)anthraquinone, cobalt octoate. May produce an allergic reaction.

2.2.2. Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P243 - Take action to prevent static discharges

P260 - Do not breathe vapour

P273 - Avoid release to the environment

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

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

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

P403 + P233 – Store in a well-ventilated place. Keep container tightly closed

2.3. Other Hazards

PBT/vPvB see section 12.5

3. Composition/Information on Ingredients

3.1. Hazardous components

Chemical Name	EC-No	REACH Registration Number	CAS-No	Weight percent	GHS Classification	M- Factor (acute)	M- Factor (chronic)	Concentration limit (%)
Styrene	202-851-5	01-2119457861-32	100-42-5	35 - 40	Flam. Liq. 3 (H226) Repr. 2 (H361d) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Asp. Tox. 1 (H304) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic Chronic 3 (H412)			
Reaction products of phosphoryl trichloride and	807-935-0	01-2119486772-26	1244733-77-4	8 - 12	Acute Tox. 4 (H302)			

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2-methyloxirane								
Titanium dioxide	236-675-5	01-2119489379-17	13463-67-7	0.1 - < 2	-			
2,2-bis(bromomethyl) propane-1,3-diol	221-967-7	01-2119931630-46	3296-90-0	0.1 - < 1	Muta. 1B (H340) Carc. 1B (H350)			
Silica, amorphous, fumed, crystalline-free	231-545-4	01-2119379499-16	112945-52-5	0.1 - < 1	-			
phthalic anhydride	201-607-5	01-2119457017-41	85-44-9	0.1 - < 1	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Resp. Sens. 1 (H334) STOT SE 3 (H335)			
propane-1,2-diol	200-338-0	01-2119456809-23	57-55-6	0.1 - < 1	-			
cobalt octoate	205-250-6	01-2119524678-29	136-52-7	0.1 - < 0.3	Skin Sens. 1A (H317) Eye Irrit. 2 (H319) Repr. 1B (H360Fd) Aquatic Acute 1 (H400) Aquatic Chronic 3 (H412)			

Additional information: This product contains an ingredient according to the candidate list of Annex XIV of the REACH Regulation 1907/2006/EC

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. First Aid Measures

4.1. Description of first aid measures

General advice: Show this safety data sheet to the doctor in attendance Do not breathe dust/fume/gas/mist/vapours/spray.

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. If symptoms persist, call a physician.

Skin contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes If skin irritation persists, call a physician.

Inhalation: Move to fresh air If not breathing, give artificial respiration Consult a physician.

Ingestion: Do NOT induce vomiting Rinse mouth. Consult a physician.

Protection of first-aiders: Use personal protective equipment.

See section 8 for more information.

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

Eye Contact: Irritating to eyes

Skin Contact: Irritating to skin. May cause sensitisation by skin contact

Inhalation: Harmful: danger of serious damage to health by prolonged exposure through inhalation Irritating to respiratory system. May produce an allergic reaction.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

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

Notes to physician No information available

5. Firefighting Measures

5.1. Extinguishing media

Suitable extinguishing media: Dry chemical, Foam, Carbon dioxide (CO₂), (closed systems)

Extinguishing Media Which Must not be Used for Safety Reasons

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special Hazards Arising from the Substance or Mixture

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

Vapours may form explosive mixtures with air. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) Heating or fire can release toxic gas : Carbon monoxide

5.3. Advice for Firefighters

Special protective equipment for fire-fighters: Wear self-contained breathing apparatus and protective suit.

5.4. Other information

- Cool containers / tanks with water spray.
- Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. **Accidental Release Measures**

6.1. **Personal precautions, protective equipment and emergency procedures**

6.1.1. For non-emergency personnel

Personal precautions:

- Remove all sources of ignition
- Heat, flames and sparks.
- Take precautionary measures against static charges.
- Ensure adequate ventilation
- Use personal protective equipment

6.1.2. For emergency responders

- Avoid breathing vapours or mists In the event of fire and/or explosion do not breathe fumes. Use personal protective equipment

6.2. **Environmental Precautions**

The product should not be allowed to enter drains, water courses or the soil. Do not flush into surface water or sanitary sewer system.

6.3. **Methods and Material for Containment and Cleaning Up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Use clean non-sparking tools to collect absorbed material

6.4. **Reference to other sections**

- See section 8 for more information

- See Section 12 for additional Ecological Information

7. Handling and Storage

7.1. Precautions for safe handling

Precautions for safe handling

Avoid static electricity build up with connection to earth.

Use only in area provided with appropriate exhaust ventilation.

In case of insufficient ventilation, wear suitable respiratory equipment.

For personal protection see section 8.

Prevention of fire and explosion

Keep away from open flames, hot surfaces and sources of ignition Empty containers may contain flammable or explosive vapours.

Hygiene measures

When using, do not eat, drink or smoke Wash hands before breaks and at the end of workday. Provide regular cleaning of equipment, work area and clothing.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage

- Keep in a dry, cool and well-ventilated place.
- Keep at temperature not exceeding 30°C
- Keep away from heat and sources of ignition.

Materials to avoid: Strong oxidizing agents, Peroxides, Reducing agents

Packaging material: Metallic GRP Tanks (Reinforced Glass Polyester)

Unsuitable materials for containers: Copper, Copper alloys, Bronze, Zinc

8. Exposure Controls/Personal Protection

8.1. Control Parameters

8.1.1. Occupational Exposure limits

Chemical Name	European Union	ACGIH OEL (Ceiling)	The United Kingdom	Ireland
Styrene 100-42-5	-	ACGIH (2020): TLV-TWA: 10 ppm TLV-STEL/C: 20 ppm Notes: OTO, A3, BEI Critical effects: CNS and hearing impairment, URT irr, peripheral neuropathy visual disorders	STEL 250 ppm STEL 1080 mg/m ³ TWA 100 ppm TWA 430 mg/m ³	TWA 20 ppm TWA 85 mg/m ³ STEL 40 ppm STEL 170 mg/m ³
Titanium dioxide 13463-67-7		TWA 10 mg/m ³	STEL 30 mg/m ³ STEL 12 mg/m ³ TWA 10 mg/m ³ TWA 4 mg/m ³	TWA 10 mg/m ³ TWA 4 mg/m ³
phthalic anhydride 85-44-9		TWA 1 ppm	STEL 12 mg/m ³ TWA 4 mg/m ³ Sen+	TWA 4 mg/m ³ STEL 12 mg/m ³ Sensitizer
propane-1,2-diol 57-55-6			STEL 450 ppm STEL 1422 mg/m ³ STEL 30 mg/m ³ TWA 150 ppm TWA 474 mg/m ³ TWA 10 mg/m ³	TWA 150 ppm TWA 470 mg/m ³ TWA 10 mg/m ³
cobalt octoate 136-52-7		0.02 mg/m ³	STEL 0.3 mg/m ³ TWA 0.1 mg/m ³ Sen+	TWA 0.1 mg/m ³ Sensitizer

Special hazards arising from the substance or mixture

Biological standards Derived No Effect Level (DNEL)

Derived No Effect Level (DNEL)				
Styrene (100-42-5)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark

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Workers - Long Term - Systemic effect		406 mg/Kg bw/day	85 mg/m ³	
Workers - Acute Short Term - Local effect			306 mg/m ³	
Workers - Acute Short term - Systemic effect			289 mg/m ³	
General Population - Acute Short Term - Local effect			182.7 mg/m ³	
General Population - Acute Short Term - Systemic effect			174.2 mg/m ³	
General Population - Long Term - Systemic effect	2.1 mg/Kg bw/day	343 mg/Kg bw/day	10.2 mg/m ³	

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)

Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		2.91 mg/kg bw/day	8.2 mg/m ³	
Workers - Acute Short term - Systemic effect			22.6 mg/m ³	
General Population - Long Term - Systemic effect	0.52 mg/kg bw/day	1.04 mg/kg bw/day	1.45 mg/m ³	
General Population - Acute Short Term - Systemic effect			5.6 mg/m ³	

Titanium dioxide (13463-67-7)

Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			10 mg/m ³	
General Population - Long Term - Systemic effect	700 mg/kg bw/day			

2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)

Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
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MATERIAL SAFETY DATA SHEET

Workers - Acute Short term - Systemic effect			0.82 mg/m ³	
General Population - Long Term - Systemic effect	0.058 mg/kg bw/day		0.2 mg/m ³	

Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect			4 mg/m ³	

phthalic anhydride (85-44-9)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		10 mg/kg bw/day	32.2 mg/m ³	
General Population - Long Term - Systemic effect	5 mg/kg bw/day	5 mg/kg bw/day	8.6 mg/m ³	

propane-1,2-diol (57-55-6)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect			168 mg/m ³	
Workers - Long Term - Local effect			10 mg/m ³	
General Population - Long Term - Systemic effect			50 mg/m ³	
General Population - Long Term - Local effect			10 mg/m ³	

cobalt octoate (136-52-7)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark

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Workers - Long Term - Local effect			235.1 µg/m ³	
General Population - Long Term - Systemic effect	175 µg/kg bw/day			
General Population - Long Term - Local effect			37 µg/m ³	

8.1.2. Predicted No Effect Concentration (PNEC)

PNEC Component		
Styrene (100-42-5)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.028 mg/L
Marine water	PNEC Aqua	0.014 mg/L
Intermittent use/release	PNEC Aqua	0.04 mg/L
Fresh water	PNEC Sediment	0.614 mg/Kg.dw
Marine water	PNEC Sediment	0.307 mg/kg.dw
Terrestrial Compartment	PNEC Soil	0.2 mg/Kg.dw
STP microorganisms	PNEC STP	5 mg/L

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.32 mg/L
Intermittent use/release	PNEC Aqua	0.51 mg/L
Marine water	PNEC Aqua	0.032 mg/L
	PNEC STP	19.1 mg/L
Fresh water	PNEC Sediment	11.5 mg/kg sediment dw
Marine water	PNEC Sediment	1.15 mg/kg sediment dw

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	PNEC Soil	0.34 mg/kg soil dw
Secondary Poisoning	PNEC Oral	11.6 mg/kg food

Titanium dioxide (13463-67-7)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.184 mg/L
Marine water	PNEC Aqua	0.0184 mg/L
Intermittent use/release	PNEC Aqua	0.193 mg/L
	PNEC STP	100 mg/L
Fresh water	PNEC Sediment	1000 mg/kg sediment dw
Marine water	PNEC Sediment	100 mg/kg sediment dw
	PNEC Soil	100 mg/kg soil dw

2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)		
Exposure	Type	PNEC
Marine water	PNEC Aqua	0.004 mg/L
Fresh water	PNEC Aqua	0.037 mg/L
	PNEC STP	21 mg/L
Fresh water	PNEC Sediment	0.037 mg/kg sediment dw
Marine water	PNEC Sediment	0.004 mg/kg sediment dw
	PNEC Soil	0.54 mg/kg soil dw
Intermittent use/release Fresh water	PNEC Aqua	0.37 mg/L

Silica, amorphous, fumed, crystalline-free (112945-52-5)		
Exposure	Type	PNEC

MATERIAL SAFETY DATA SHEET

Secondary Poisoning	PNEC Oral	60000 mg/kg
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phthalic anhydride (85-44-9)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	1 mg/L
Marine water	PNEC Aqua	0.1 mg/L
Intermittent use/release	PNEC Aqua	5.6 mg/L
	PNEC STP	10 mg/L
Fresh water	PNEC Sediment	3.8 mg/kg sediment dw
Marine water	PNEC Sediment	0.38 mg/kg sediment dw
Terrestrial Compartment	PNEC Soil	0.173 mg/kg soil dw

propane-1,2-diol (57-55-6)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	260 mg/L
Marine water	PNEC Aqua	26 mg/L
Intermittent use/release	PNEC Aqua	183 mg/L
	PNEC STP	20000 mg/L
Fresh water	PNEC Sediment	572 mg/kg sediment dw
Marine water	PNEC Sediment	57.2 mg/kg sediment dw
	PNEC Soil	50 mg/kg soil dw
Secondary Poisoning	PNEC Oral	1133 mg/kg

cobalt octoate (136-52-7)		
Exposure	Type	PNEC

Fresh water	PNEC Aqua	0.62 µg/L
Marine water	PNEC Aqua	2.36 µg/L
STP microorganisms	PNEC STP	0.37 mg/L
Fresh water	PNEC Sediment	53.8 mg/kg sediment dw
Marine water	PNEC Sediment	69.8 mg/kg sediment dw
Terrestrial Compartment	PNEC Soil	10.9 mg/kg soil dw

8.2. Exposure Controls

8.2.1. Occupational exposure controls

Engineering measures: Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

8.2.2. Personal protective equipment

General Information: Use personal protective equipment.

Respiratory protection:

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)

If exposure limits are likely to be exceeded / In case of insufficient ventilation wear suitable respiratory equipment :

Breathing apparatus with filter Type A (Organic gases and vapours filter conforming to EN 14387, APF 40 < 1 hour, APF 200 > 1 hour) / Type A(2)/P3 in combination with Particulates filter conforming to EN 143 , if exposed to dust.

Eye protection: Safety glasses with side-shields. Do not wear contact lenses.

Skin and body protection: Antistatic boots. Protective shoes or boots. Wear fire/flame resistant/retardant clothing.

Hand protection:

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training

Glove material : Neoprene , Nitriles , Viton (R) or Polyvinyl alcohol

Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

8.3. Environmental exposure controls

Do not allow material to contaminate ground water system

9. Physical and Chemical Properties

9.1. Exposure Controls/Personal Protection

Property	Values	Remark
Physical state	Liquid	
Colour	white	
Appearance		No data available
Particle size		No data available
Odour	Styrene	
Odour Threshold	0.15 ppm	Values related to styrene
pH	No data available	
pH (as aqueous solution)		No data available
Melting point/range	- 30 °C	Values related to styrene
Freezing Point		No data available
Softening point		No data available
Boiling point	145 °C	Values related to styrene
Flash point	31 °C	Values related to styrene
Flammability		No data available
Flammability Limit in Air		
Upper	6,1 – 6,8%	Values related to styrene

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Lower	0,9 – 1,1%	Values related to styrene
Vapour pressure	6 hPa	20°C
Vapour density	3.6	Values related to styrene
Density	1.1 – 1.15 g/cm ³	20°C
Specific Gravity		No data available
Bulk density		No data available
Water solubility		Insoluble in water
Solubility in other solvent		Soluble in most organic solvents
Partition coefficient:		
n-octanol/water	3	Values related to styrene
Autoignition temperature	490 °C	Values related to styrene
Decomposition temperature		No data available
Viscosity, kinematic	182 – 227 mm ² /s	25°C
Viscosity, dynamic	200 – 250 mPa.s	25°C

9.2. Other Information

Information with regards to physical hazard classes

Property	Values	Remark
Explosives		No data available
Flammable gases		No data available
Aerosols		No data available
Oxidising gases		No data available
Gases under pressure		No data available
Flammable liquids		No data available
Flammable solids		No data available
Pyrophoric liquids		No data available
Pyrophoric solids		No data available
Self-heating substances and mixtures		No data available
Substances and mixtures which, in		

contact with water, emit flammable gases	No data available
Oxidising liquids	No data available
Oxidising solids	No data available
Oxidising Properties	No data available
Organic peroxides	No data available
Corrosive to metals	No data available
Desensitised explosives	No data available

Other safety characteristics

Sensitivity to Mechanical Impact	No data available
SAPT (self-accelerating polymerisation temperature)	No data available
Formation of explosible dust/air mixtures	No data available
Acid/alkaline reserve	No data available
Miscible	No data available
Conductivity	No data available
Corrosiveness	No data available
Gas group	No data available
Redox potential	No data available
Photocatalytic properties	No data available

10. **Stability and Reactivity**

10.1. **Reactivity**

Product may ignite and burn at temperatures exceeding the flash point

10.2. **Chemical stability**

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: In use, may form flammable/explosive vapour-air mixture.

Hazardous polymerisation: Polymerisation can occur.

10.4. Conditions to avoid

- Heat, flames and sparks.
- Exposure to light.
- Take precautionary measures against static charges.

10.5. Incompatible materials

Strong oxidizing agents, Peroxides, Reducing agents.

10.6. Hazardous decomposition Products

Incomplete combustion and thermolysis produces potentially toxic gases such as carbon monoxide and carbon dioxide.

11. Toxicological Information

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

11.1.1. Inhalation

- Harmful: danger of serious damage to health by prolonged exposure through inhalation
- Irritating to respiratory system May produce an allergic reaction

11.1.2. Ingestion

- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea

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Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation	Read-across (Analogy)
Styrene 100-42-5	5000 mg/kg (Rat)	> 2000 mg/kg bw (Rat) 24h OECD 402	11.8 mg/L (Rat) 4h CSR	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	632 mg/kg bw (Rat) No guideline followed	> 2000 mg/kg bw (Rat) OECD 402	> 7 mg/L air (Rat) 4h OECD 403, OECD 433	
Titanium dioxide 13463-67-7	> 5000 mg/kg bw (Rat) OECD 425, EPA OPPTS 870.1100		> 6,82 mg/L air (Rat) 4h No guideline followed	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	> 2000 mg/kg bw (Rat) OECD 401	> 5000 mg/kg bw (Rat) OECD 402		
Silica, amorphous, fumed, crystalline-free 112945-52-5	> 5000 mg/kg bw (Rat) OECD 401	> 5000 mg/kg (Rabbit)	> 0.14 mg/L air (Rat) 4h (analytical) OECD 403	
phthalic anhydride 85-44-9	1530 mg/kg bw (Rat)	> 3160 mg/kg bw (Rabbit)	> 2.14 mg/L (Rat) 4h OECD 403	
propane-1,2-diol 57-55-6	22000 mg/kg bw (Rat) Study predates GLP and OECD guidelines	LD50 (24h) > 2000 mg/kg bw (Rabbit)	LC50 (2h) aerosol > 317042 mg/m ³ air (Rabbit)	
cobalt octoate 136-52-7	3129 mg/kg/bw (Rat) OECD 425	> 2000 mg/kg bw (Rat) OECD 402		

11.1.3. Skin corrosion/irritation

Chemical Name	Skin corrosion/irritation	Read-across (Analogy)
Styrene 100-42-5	Irritating to skin in vivo assay rabbit	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	No skin irritation in vivo assay rabbit OECD 404	
Titanium dioxide 13463-67-7	No skin irritation in vivo assay rabbit OECD 404 EPA OPPTS 870.2500	

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2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	No skin irritation in vivo assay rabbit	
Silica, amorphous, fumed, crystalline-free 112945-52-5	No skin irritation rabbit OECD 404	
phthalic anhydride 85-44-9	Irritating to skin in vivo assay rabbit OECD 404	
propane-1,2-diol 57-55-6	No skin irritation in vivo assay rabbit OECD 404	
cobalt octoate 136-52-7	No skin corrosion in vitro study OECD 431 EU Method B. 40	

11.1.4. Serious Eye Damage/Eye Irritation

Chemical Name	Serious Eye Damage/Eye Irritation	Read-across (Analogy)
Styrene 100-42-5	Irritating to eyes in vivo assay rabbit	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	No eye irritation in vivo assay (rabbit) OECD 405	
Titanium dioxide 13463-67-7	No eye irritation in vivo assay rabbit OECD 405 EU Method B.5 EPA OPPTS 870.2400	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Mild eye irritation in vivo assay rabbit	
Silica, amorphous, fumed, crystalline-free 112945-52-5	No eye irritation rabbit OECD 405	
phthalic anhydride 85-44-9	Irritating to eyes in vivo assay rabbit Draize Test	
propane-1,2-diol 57-55-6	No eye irritation in vivo assay rabbit OECD 405	
cobalt octoate 136-52-7	Moderate eye irritation OECD 437 EU Method B.47 Irritating to eyes rabbit OECD 405	

11.1.5. Respiratory or skin sensitisation

May cause sensitisation by skin contact.

Chemical Name	Respiratory or skin sensitisation	Read-across (Analogy)
Styrene 100-42-5	Does not cause skin sensitization Does not cause respiratory sensitization CSR	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	Does not cause skin sensitization in vivo assay mouse EU Method B.42 OECD 429	
Titanium dioxide 13463-67-7	Does not cause skin sensitization in vivo assay guinea pig OECD 406 EU Method B.6 EPA OPP 81-6 mouse similar to OECD 429	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Does not cause skin sensitization in vivo assay guinea pig OECD 406	
Silica, amorphous, fumed, crystalline-free 112945-52-5	Does not cause skin sensitization Does not cause respiratory sensitization	
phthalic anhydride 85-44-9	May cause sensitisation by inhalation and skin contact in vivo assay guinea pig OECD 406	
propane-1,2-diol 57-55-6	Does not cause skin sensitization Does not cause respiratory sensitization in vivo assay guinea pig OECD 406 mouse OECD 429	
cobalt octoate 136-52-7	May cause sensitisation by skin contact in vivo assay mouse OECD 429	

11.1.6. Mutagenic Effects May Cause Genetic Defects

In vitro study

Chemical Name	Ames test	Read-across (Analogy)
Styrene 100-42-5	Ambiguous In vitro gene mutation study in bacteria (S. typhimurium G46, TA1530, TA 1535, TA100, TA98, TA1538, TA 1537) OECD 471	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98 and TA 100) (Escherichia coli WP2 uvrA) OECD 471 OECD 472 EU Method B.13/14	
Titanium dioxide 13463-67-7	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98, TA100 and TA 102) OECD 471	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	positive In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98 and TA 100) OECD 471	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative In vitro gene mutation study in bacteria OECD 471	
phthalic anhydride 85-44-9	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98, TA100 and TA 102) (Escherichia coli WP2 uvrA) OECD 471	
propane-1,2-diol 57-55-6	negative	

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	In vitro gene mutation study in bacteria Salmonella typhimurium (S. typhimurium, other: TA 92, TA 94, TA 98, TA 100, TA 1535, TA 1537)	
cobalt octoate 136-52-7	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98, TA100 and TA 102) OECD 471	Cas N°: 68956-82-1, 14024-48-7

Chemical Name	In vitro Mammalian Cell Gene Mutation Test	Read-across (Analogy)
Styrene 100-42-5	Ambiguous In vitro gene mutation study in mammalian cells hamster OECD 476	
Titanium dioxide 13463-67-7	negative In vitro gene mutation study in mammalian cells mouse OECD 476	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Ambiguous In vitro gene mutation study in mammalian cells hamster similar to EU Method B.19	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative In vitro gene mutation study in mammalian cells OECD 476	
phthalic anhydride 85-44-9	negative In vitro gene mutation study in mammalian cells hamster OECD 476	
cobalt octoate 136-52-7	negative In vitro gene mutation study in mammalian cells mouse OECD 476	Cas N°: 7440-48-4, 1308-06-1, 10124-43-3, 12016-80-7
Chemical Name	In vitro Mammalian Chromosome Aberration Test	Read-across (Analogy)

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Styrene 100-42-5	positive Chromosome aberration test in vitro OECD 473 OECD 479	
Titanium dioxide 13463-67-7	negative Chromosome aberration test in vitro hamster OECD 473	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative Chromosome aberration test in vitro OECD 473	
phthalic anhydride 85-44-9	Ambiguous Chromosome aberration test in vitro hamster OECD 473	
propane-1,2-diol 57-55-6	negative Chromosome aberration test in vitro OECD 473	

In Vivo Assay

Chemical Name	Unscheduled DNA Synthesis (UDS)	Read-across (Analogy)
Styrene 100-42-5	negative mouse OECD 486 OECD 474	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	negative mouse OECD 474	
Titanium dioxide 13463-67-7	negative rat OECD 474	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative rat	
propane-1,2-diol 57-55-6	negative rat	
cobalt octoate 136-52-7	negative rat OECD 474 OECD 475	Cas N°: 68956-82-1, 14024-48-7, 10026-24-1
Chemical Name	European Union	
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Muta. 1B	

11.1.7. Carcinogenicity May Cause Cancer

Carcinogenicity				
Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD 453	rat	NOAEC systemic (carcinogenicity) $\geq$ 4.34 mg/L air (nominal)	negative
Inhalation	OECD 453	mouse	LOAEC (carcinogenicity) female/male = 0.09 - 0.18 mg/L air resp., NOAEC (carcinogenicity) male = 0.09 mg/L air	positive
Oral	No information available	rat	NOAEL (carcinogenicity) $\geq$ 2000 mg/kg bw /day	positive
Oral	No information available	mouse	LOAEL (carcinogenicity) = 150 mg/kg bw /day	positive

2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	similar to OECD 453	mouse rat	LOAEL (rats) 13 weeks = 2500 ppm LOAEL (mice) 13 weeks = 312 ppm	positive

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Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 453	rat	NOAEL = 1800 - 3200 mg/kg bw/day	negative

phthalic anhydride (85-44-9)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	No information available	mouse	NOAEL (carcinogenicity, male) = 3570 mg/kg bw/day (72w) NOAEL (carcinogenicity, female) = 1785 mg/kg bw/day (72w)	negative
Oral	No information available	rat	NOAEL (carcinogenicity) = 1000 mg/kg bw/day (105w)	negative

Chemical Name	European Union
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Carc. 1B

11.1.8. Reproductive toxicity

Inhalation	No information available	rat	NOAEC carcinogenicity (male/female) > 350 mg/m ³ air (18 month)	negative
Dermal	No information available	mouse	NOAEL carcinogenicity (female) = 0.02 ml/twice a week	negative

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Oral	No information available	rat	NOAEL carcinogenicity (male) = 1700 mg/kg bw/day NOAEL carcinogenicity (male/female) = 3040 mg/kg bw/day (105 weeks)	negative
Oral	No information available	mouse	NOAEL carcinogenicity (male/female) = 2390 mg/kg bw/day	negative

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 416	rat	NOAEL (F1) = 99 mg/kg bw/day	negative

Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 415	rat	NOAEL = 497 mg/kg bw/day	negative

phthalic anhydride (85-44-9)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	No information available	mouse	NOAEL (reproductive, male) = 3570 mg/kg bw/day (72w) NOAEL (reproductive, female) = 1785 mg/kg bw/day (72w)	negative
Oral	No information available	rat	NOAEL (reproductive, female) = 1000 mg/kg bw/day (105w)	negative

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propane-1,2-diol (57-55-6)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	NTP Reproductive	mouse	NOAEL toxicity	negative
	Assessment by		(male/female) = 10100	
	Continuous Breeding		mg/kg bw/day	
	(RACB)		NOAEL fertility	
			(male/female) = 10100	
			mg/kg bw/day	
			NOAEL developmental	
			effects (male/female) =	
			10100 mg/kg bw/day	

cobalt octoate (136-52-7)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	Read-across (Analogy) Cas N°: 7440-48-4 OECD 422	rat	NO(A)EL (P&F) 28d = 30 mg/kg bw/day	positive

11.1.9. Developmental Toxicity

Suspected of damaging the unborn child.

Developmental Toxicity				
Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	No information available	rat	NOAEC/LOAEC (maternal toxicity +	positive

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			developmental toxicity) >50d = 1.08 - 2.15 mg/L air	
Inhalation	OECD 414	rat	LOAEC (maternal toxicity) 6-15d = 1.28 mg/L air	positive
Inhalation	OECD 414	rat	NOAEC (developmental toxicity) 6-15d >= 2.56 mg/L air	negative
Inhalation	OECD 414	rabbit	NOAEC (maternal toxicity + developmental toxicity) 6-18d = 2.56 mg/L air	negative

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)

Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 414 EPA OPPTS 870.3700	rabbit	NOAEL (maternal & developmental toxicity) = 500 mg/kg bw/day	negative

Titanium dioxide (13463-67-7)

Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 414	rat	NOAEL (maternal & developmental toxicity) 20d = 1000 mg/kg bw/day	negative

Silica, amorphous, fumed, crystalline-free (112945-52-5)

Routes of Exposure	Method	Species	Dose	Evaluation
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Oral	OECD 414	rat	NOAEL (maternal toxicity) = 1350 mg/kg bw/day NOAEL (teratogenicity) = 1350 mg/kg bw/day	negative
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phthalic anhydride (85-44-9)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	Read-across (Analogy) phthalic acid Cas N° : 88-99-3	rat	NOAEL (maternal toxicity) = 1000 mg/kg bw/day NOAEL (teratogenicity) = 1700 mg/kg bw/day	positive

propane-1,2-diol (57-55-6)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 414	mouse	NOAEL (developmental toxicity) = 10400 mg/kg bw/day NOAEL (maternal toxicity) = 52 mg/kg bw/day	negative

11.1.10. Specific target organ toxicity Single Exposure

May cause irritation of respiratory tract

STOT - single exposure				
propane-1,2-diol (57-55-6)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	No information available	rat	NOAEL (male/female) 102 weeks = 1700 mg/kg bw/day	

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Dermal	No information available	mouse	NOAEL (female) = 0.02 ml (twice by week, 10 weeks)	
Inhalation	No information available	rat	LOAEC (male) 90d = 160 mg/m ³	

11.1.11. Specific target organ toxicity Repeated Exposure

Causes damage to organs through prolonged or repeated exposure , target organ(s) : Central nervous system , Ears

STOT - repeated exposure				
Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Remarks
Inhalation	OECD 412	rat mouse	NOAEC male (28d) = 3.47 mg/L air NOAEC (ototoxicity) 28d = 2.13 mg/L air NOAEC (28d) = 0.181 mg/L air NOAEC (28d) = 0.688 mg/L air	
Inhalation	No information available	rat	NOAEC (nasal tract) = 0.85 mg/L air NOAEC (overall) = 2.13 mg/L air NOAEC (ototoxicity) = 0.85 mg/L air LOAEC (ototoxicity) = 3.41 mg/L air NOAEC (overall) = 2.13 mg/L air	

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Oral	No information available	rat	NOAEL (toxicity) = 1000 mg/kg bw/day LOAEL (toxicity) = 2000 mg/kg bw/day	
Oral	No information available	mouse	NOAEL (toxicity) = 150 mg/kg bw /day LOAEL (toxicity) = 300 mg/kg bw /day	
Inhalation	OECD 453	rat	LOAEC local (toxicity) = 0.21 mg/L air	

Titanium dioxide (13463-67-7)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	OECD 407	rat	NOEL (29d) = 24000 mg/kg bw/day	
Oral	OECD 408	rat	NOAEL (92-93d) > 1000 mg/kg/day	

2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	similar to OECD 453	rat	LOAEL (13 weeks) = 2500 ppm	
Oral	similar to OECD 453	mouse	LOAEL (13 weeks) = 312 ppm	

Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	OECD 408	rat	NOEL (highest dose) 4000 ≤ 4500 mg/kg bw/day 90d	

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Inhalation	OECD 413	rat	NOEC = 1.3 mg/m ³ air NOEC < 1.3 mg/m ³ air 90d	
Dermal	No information available	rabbit	NOAEL >= 10000 mg/kg bw/day	

phthalic anhydride (85-44-9)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	No information available	rat	NOAEL = 1250 mg/kg bw/day LOAEL = 2500 mg/kg bw/day 7 weeks	
Oral	No information available	rat	NOAEL (105 weeks) = 500 mg/kg bw/day	
Oral	No information available	mouse	LOAEL (male) = 2340 mg/kg bw/day LOAEL (female) = 1717 mg/kg bw/day 72 weeks	

propane-1,2-diol (57-55-6)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	No information available	rat	NOAEL = 1700 mg/kg bw/day	
Inhalation	No information available	rat	NOAEC = 1000 mg/m ³ air NOAEC = 2200 mg/m ³ air	
Dermal	No information available	mouse	NOAEL = 0.02 ml/twice a week	

cobalt octoate (136-52-7)				
Routes of Exposure	Method	Species	Dose	Remarks

MATERIAL SAFETY DATA SHEET

Oral	Read-across (Analogy) cobalt dichloride hexahydrate OECD 408	rat	NOAEL (90d) = 3 mg/kg bw/day	
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11.1.12. Aspiration hazard

Due to the viscosity, this product does not present an aspiration hazard.

11.2. Information on other hazards

- Endocrine disrupting properties: No information available
- Other information: None

12. Ecological Information

12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not flush into surface water or sanitary sewer system

12.1.1. Acute aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Styrene 100-42-5	EC50 (72h) = 4.9 mg/L (Pseudokirchnerella subcapitata) EPA OTS 797.1050	EC50 (48h) = 4.7 mg/L (Daphnia magna) NOEC = 1.9 mg/L (Daphnia magna) OECD 202	LC50 (96h) = 4.02 - 10 mg/L (Pimephales promelas) OECD 203	EC (30min) = 500 mg/L (Activated sludge of a predominantly domestic sewage) OECD 209
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	EC50 (72h) = 82 mg/L (Pseudokirchneriella subcapitata) OECD 201, EU Method C.3			EC50 (3h) = 784 mg/L (Activated sludge) ISO 8192

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Titanium dioxide 13463-67-7	EC50 (72h) > 100 mg/L (Pseudokirchneriella subcapitata) NOEC (72h) >= 100 mg/L (Pseudokirchneriella subcapitata) OECD 201	EC50 (48h) > 100 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 100 mg/L (Carassius auratus) NOEC (96h) >= 100 mg/L (Carassius auratus) OECD 203	EC50 (3h) > 1000 mg/L, NOEC (3h) >= 1000 mg/L (Activated sludge of a predominantly domestic sewage) OECD 209
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	EC50 (72h) = 37 mg/L (Desmodesmus subspicatus) NOEC (72h) = 12.5 mg/L (Desmodesmus subspicatus) OECD 201	EC50 (48h) > 100 mg/L (Daphnia magna) NOEC (48h) = 56 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 100 mg/L (Oncorhynchus mykiss) NOEC (96h) = 100 mg/L (Oncorhynchus mykiss) OECD 203	EC50 (3h) = 2100 mg/L (Activated sludge, domestic) NOEC (3h) = 320 mg/L (Activated sludge, domestic) OECD 209
Silica, amorphous, fumed, crystalline-free 112945-52-5		EL50 (24h) >= 1000 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 10000 mg/L (Brachydanio rerio) OECD 203	
phthalic anhydride 85-44-9	EC50 (72h) = 68 mg/L, NOEC (72h) = 32 mg/L (Pseudokirchnerella subcapitata) OECD 201	EC50 (48h) = 71 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 99 mg/L (Oryzias latipes) OECD 203	EC50 (3h) > 1000 mg/L (Activated sludge), ISO 8192 EC50 (16h) = 13 mg/L (Pseudomonas putida), ISO 10712
propane-1,2-diol 57-55-6	EC50 (72h) = 24200 mg/L (Pseudokirchnerella subcapitata) EC50 (48h) = 34100 mg/L (Pseudokirchnerella subcapitata) EC50 (96h) = 19000 mg/L (Pseudokirchnerella subcapitata) OECD 201	LC50 (48h) = 18340 mg/L (Ceriodaphnia dubia) LC50 (96h) = 18800 mg/L (Americamysis bahia) EPA 600/4-90/0-27	LC50 (96h) = 40613 mg/L (Oncorhynchus mykiss)	EC50 (0.5h) > 1000 mg/L (Activated sludge) OECD 209 NOEC (18h) > 20000 mg/L (Pseudomonas putida)
cobalt octoate 136-52-7	EC50 (72h) = 144 µg Codiss./L (Pseudokirchneriella subcapitata) NOEC (72h) = 32.2 µg./L		LC50 (96h) = 1.512 mg/L (Oncorhynchus mykiss) NOEC (96h) = 0.939 mg/L	EC10 (30 min) = 3.73 mg/L (Activated sludge)

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	(Pseudokirchneriella subcapitata) LOEC (72h) = 52.7 µg Codiss./L (Pseudokirchneriella subcapitata) OECD 201		(Oncorhynchus mykiss) LOEC (96h) = 1.577 mg/L (Oncorhynchus mykiss) ASTM guideline (1996)	EC50 (30 min) = 120 mg/L (Activated sludge) Read across with Cas N°: 7646-79-9 OECD 209
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12.1.2. Chronic aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Styrene 100-42-5		NOEC (21d) = 1.01 mg/L (Daphnia magna) LOEC (21d) = 2.06 mg/L (Daphnia magna) EC50 (21d) = 1.88 mg/L (Daphnia magna) OECD 203		
phthalic anhydride 85-44-9		NOEC (reproduction) 21d = 16 mg/L, EC50 (reproduction) 21d = 42 mg/L (Daphnia magna) OECD 211	LC50 (7d) = 560 mg/L (Danio rerio), OECD 210 LOEC (total embryotoxicity) 60d = 32 mg/L, NOEC (mortality, length, weight, embryotoxicity) 60d = 10 mg/L, OECD 210	
propane-1,2-diol 57-55-6	NOEC (14d) = 15000 mg/L (Pseudokirchnerella subcapitata) OECD 201	NOEC (7d) = 13020 mg/L (Ceriodaphnia sp) EPA 600/4-89/001	NOEC (7d) = 11530 mg/L (Pimephales promelas) EPA 600/4-89/001	
cobalt octoate 136-52-7	EC50 (7d) = 90.1 µg./L (Lemna minor) NOEC (7d) = 3.0 µg/L (Lemna minor) LOEC (7d) = 8.8 µg/L (Lemna minor) OECD 221	NOECR (21d) = 60.8 µg./L (Daphnia magna) LC50 (21d) = 121.3 mg/L (Daphnia magna) LOECR (21d) = 93.3 µg		

		Codiss./L (Daphnia magna) OECD 211		
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12.1.3. Effects on terrestrial organisms - Component Information

Acute toxicity				
phthalic anhydride (85-44-9)				
Acute toxicity	Test Method	Species	Values	Remarks
plants		Lactuca sativa	EC50 (germination) = 731 mg/L	

Chronic toxicity				
Styrene (100-42-5)				
Chronic toxicity	Method	Species	Values	Remarks
Toxicity to invertebrates	OECD 207	Eisenia foetida	LC50 (14d) = 120 mg/kg soil dw LOEC (burrowing time and mean percent weight change) = 65 mg/kg soil dw LOEC (survival) = 180 mg/kg soil dw NOEC (mean percent weight change) = 34 mg/kg soil dw	

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)				
Chronic toxicity	Method	Species	Values	Remarks
Toxicity to soil dwelling organisms.	OECD 422	Eisenia foetida	NOEC (56d) = 53 mg/kg soil dw	

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plants	OECD 208	Sinapis alba	NOEC (21d) = 17 mg/kg soil dw	
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2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)				
Chronic toxicity	Method	Species	Values	Remarks
Toxicity to invertebrates	OECD 207	Eisenia foetida	LC50 (14d) = 540 mg/kg soil dw NOEC (14d) = 180 mg/kg soil dw	

12.2. Persistence and Degradability

Chemical Name	Degradation	Evaluation
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	Half-life for hydrolysis > 1 year (25°C, pH = 4) Half-life for hydrolysis = 1 year (25°C, pH = 9)	Hydrolysis

Chemical Name	Biodegradation	Evaluation
Styrene 100-42-5	87% (20d) similar to OECD 301D	Readily biodegradable
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	14% (28d) OECD TG 301 E	Inherently biodegradable.
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	25 % (28d) OECD 301B	Not readily biodegradable
phthalic anhydride 85-44-9	68 % (10d), 74 % (30d) OECD 301 D	Readily biodegradable
propane-1,2-diol 57-55-6	81,7 % (28d), OECD 301 F 95,8 % (64d), OECD 306	Readily biodegradable
cobalt octoate 136-52-7	60% (> 10d), OECD 301 B	Readily biodegradable

12.3. Bio-accumulative potential

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Bioconcentration factor (BCF)		
Styrene (100-42-5)		
Method	Species	Bioconcentration factor (BCF)
Calculation method		74

Reaction products of phosphoryl trichloride and 2-methyloxirane (1244733-77-4)		
Method	Species	Bioconcentration factor (BCF)
OECD 305 C	Cyprinus carpio	14

phthalic anhydride (85-44-9)		
Method	Species	Bioconcentration factor (BCF)
Calculation method		3.16 – 3.4

propane-1,2-diol (57-55-6)		
Method	Species	Bioconcentration factor (BCF)
Calculation method		0.09

Chemical Name	log Pow
Styrene 100-42-5	3
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	2.68
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	1.08

12.4. Mobility in Soil

Chemical Name	LogK _{oc}	K _{oc}
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Styrene 100-42-5	2,55	352
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	< 1.25	< 17.8
phthalic anhydride 85-44-9	-	31
propane-1,2-diol 57-55-6	0,46	-

12.4.1. Results in PBT and vPvB Assessment

Chemical Name	PBT	vPvB
Styrene 100-42-5	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Titanium dioxide 13463-67-7	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is considered to be very persistent and very bioaccumulating (vPvB).
Silica, amorphous, fumed, crystalline-free 112945-52-5	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
phthalic anhydride 85-44-9	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
propane-1,2-diol 57-55-6	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.5. Endocrine disrupting Properties

No information available

12.6. Other Adverse Effects

None known

13. Disposal Considerations

13.1. Waste Treatment Methods

13.1.1. Waste from Residues/Unused Products

Dispose of in accordance with the European Directives on waste and hazardous waste. Do not flush into surface water or sanitary sewer system

13.1.2. Contaminated Packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal.

13.1.3. Other information

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Waste codes should be assigned by the user based on the application for which the product was used.

14. Transport Information

14.1. 1.1. UN number or ID number

ADR/RID UN1866

IMDG/IMO UN1866

ICAO/IATA UN1866

ADN UN1866

14.2. 1.2. UN number or ID number

ADR/RID Resin solution: UN1866, RESIN SOLUTION, 3, PG III, (D/E)

IMDG/IMO Resin solution: UN1866, RESIN SOLUTION, 3, PG III, (31°C c.c.)

ICAO/IATA: UN1866, RESIN SOLUTION, 3, PG III

ADN: Resin solution; UN1866, RESIN SOLUTION, 3, PG III

14.3. 1.3. Transport hazard class(es)

ADR/RID Hazard class 3

IMDG/IMO Hazard class 3

ICAO/IATA Hazard class 3

ADN Hazard class 3

14.4. 1.4. Packing group

ADR/RID III

IMDG/IMO III

ICAO/IATA III

ADN III

14.5. 1.5. Environmental hazards

ADR/RID No

IMDG/IMO No

Marine pollutant No

ICAO/IATA No

ADN No

14.6. 1.6. Special precautions for user

ADR/RID

Classification Code	F1
Tunnel restriction code	(D/E)
Limited quantity	5 L
IMDG/IMO	
EmS	F-E, S-E
Limited quantity	5 L
ICAO/IATA	
ERG Code	3L
Limited quantity	10 L
ADN	
Classification Code	F1
Limited quantity	5 L
ventilation	VE01

Special precautions for users: No information available

14.7. Maritime transport in bulk according to IMO instruments

Transport in bulk according to Annex II of MARPOL and the IBC Code not applicable

15. Regulatory Information

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

Regulation (EC) No. 1907/2006 (REACH)

Regulation (EC) No. 1272/2008 (CLP)

Regulation (EU) No. 2020/878

Directive 88/642/EEC

Directive 98/24/EC

Directive 1999/92/EC

Directive 2012/18/EU

The mixture is subject to restrictions on use, see Annex XVII of the Regulation 1907/2006/EC (REACH): Column 1, n° 3; Column 1, n° 40.

European Union

National regulatory information The United Kingdom

Avoid exceeding of the given occupational exposure limits (see section 8).

Ireland

Avoid exceeding of the given occupational exposure limits (see section 8).

15.2. Chemical safety assessment

Chemical Safety Assessment Yes

Exposure scenario Relevant information for risk control are communicated in the form of exposure scenario attached to the safety data sheet.

16. Other Information

Full text of H-Statements referred to under sections 2 and 3

H226 - Flammable liquid and vapour

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

H340 - May cause genetic defects

H350 - May cause cancer

H360Fd – May damage fertility. Suspected of damaging the unborn child

H361d – Suspected of damaging the unborn child

H372 – Causes damage to organs through prolonged or repeated exposure if inhaled

H400 – Very toxic to aquatic life

H412 – Harmful to aquatic life with long lasting effects

EUH208 – May produce an allergic reaction

Training Advice: Handle in accordance with good industrial hygiene and safety practice. To avoid risks to man and the environment, comply with the instructions for use.

Sources of key data used to compile the datasheet: ECHA

- Former date 16-Dec-2022
- Revision date 29-Aug-2023

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

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.

End of Safety Data Sheet