RESIN POLYESTER ORTHOPHTHALIC

Product Name:	**Resin Polyester Orthophthalic**
	1570450 Rev. 0
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: Resin Polyester Orthophthalic

Chemical Name: **Unsaturated Polyester Resin**

Pure Substance/Mixture: Mixture

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

Identified uses: 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,

Tricel Composites (NI) Limited

Unit 4, Milltown Ind. Estate, Greenan Road. Warrenpoint, Newry
Co. Down,

LS10 1PS.
Tel: +44 (0)113 270 3133

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 (nº 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)
Flammable liquids	Category 3 - (H226)

2.2. Label elements

Signal Word: Danger

Contains: cobalt octoate, 2,2-bis(bromomethyl)propane-1,3-diol, diantimony trioxide, Styrene

2.2.1. Hazard Statements

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

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

Physical hazards

H226 - Flammable liquid and vapour

EU H -Phrases

EUH208 Contains 2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane, Alkyl (C12, C14) glycidyl ether- 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

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. Substances

Not applicable

3.2. Mixtures

Hazardous Components

Chemical Name	EC-No	REACH Registration Number	CAS-No	Weight percent	GHS Classification	M-Factor (acute)	M-Factor (chronic)	Concentration limit (%)
Aluminum hydroxide	244-492-7	01-2119529246-39	21645-51-2	> 20	-			
Styrene	202-851-5	01-2119457861-32	100-42-5	20 - < 25	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)			
diantimony trioxide	215-175-0	01-2119475613-35	1309-64-4	6 - 8	Carc. 2 (H351)			
Zinc borate	235-804-2	No data available	138265-88-0	3 - 6	Aquatic Acute 1 (H400)			
Reaction products of phosphoryl trichloride and 2-methyloxirane	807-935-0	01-2119486772-26	1244733-77-4	2 - 4	Acute Tox. 4 (H302)			
2,2-bis(bromomethyl) propane-1,3-diol	221-967-7	01-2119931630-46	3296-90-0	0.1 - < 2	Muta. 1B (H340) Carc. 1B (H350)			
Silica, amorphous, fumed, crystalline-free	231-545-4	01-2119379499-16	112945-52-5	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)	1		

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	271-846-8	01-2119485289-22	68609-97-2	0.1 - < 0.25	Skin Irrit. 2 (H315) Skin Sens. 1 (H317)			
2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	216-823-5	01-2119456619-26	1675-54-3	0.1 - < 0.25	Skin Irrit. 2 (H315) Skin Sens. 1 (H317) Eye Irrit. 2 (H319) Aquatic Chronic 2 (H411)			Eye Irrit. 2 :: C>=5% Skin Irrit. 2 :: C>=5%

Additional information This product contains an ingredient according to the candidate list of Annex XIV of the REACH Regulation1907/2006/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
Ingestion	Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to physician No information available

5. Firefighting Measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide (CO 2), (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 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.

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

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

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

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

Methods for 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 conditions	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

7.3. Specific end use(s)

Specific use(s)	No information available

8. Exposure Controls/Personal Protection

8.1. Control Parameters

Occupational Exposure Limits

Chemical Name	European Union	ACGIH OEL (Ceiling)	The United Kingdom	Ireland
Aluminum hydroxide 21645-51-2			STEL 30 mg/m³ STEL 12 mg/m³ TWA 10 mg/m³ TWA 4 mg/m³	We are not aware of any national exposure limit.
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/m³ TWA 100 ppm TWA 430 mg/m³	TWA 20 ppm TWA 85 mg/m³ STEL 40 ppm STEL 170 mg/m³
diantimony trioxide 1309-64-4			STEL 1.5 mg/m³ TWA 0.5 mg/m³	TWA 0.5 mg/m³
cobalt octoate 136-52-7		0.02 mg/m³	STEL 0.3 mg/m³ TWA 0.1 mg/m³ Sen+	TWA 0.1 mg/m³ Sensitizer

Special hazards arising from the substance or mixture

Biological Standards

Chemical Name	European Union	The United Kingdom	Ireland
Zinc borate 138265-88-0	TLV - TWA: 10 mg/m³ (ACGIH) TLV - TWA: 5 mg/m³	We are not aware of any national exposure limit.	We are not aware of any national exposure limit.

Derived No Effect Level (DNEL)

Derived No Effect Level (DNEL)				
Aluminum hydroxide (21645-51-2)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			3.59 mg/m³	
General Population - Long Term - Systemic effect	2.37 mg/kg bw/day			

Styrene (100-42-5)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		406 mg/Kg bw/day	85 mg/m³	

Workers - Acute Short Term - Local effect			306 mg/m3	
Workers - Acute Short term - Systemic effect			289 mg/m3	
General Population - Acute Short Term - Local effect			182.7 mg/m3	
General Population - Acute Short Term - Systemic effect			174.2 mg/m3	
General Population - Long Term - Systemic effect	2.1 mg/Kg bw/day	343 mg/Kg bw/day	10.2 mg/m3	

diantimony trioxide (1309-64-4)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			0.5 mg/m³	
Workers - Long Term - Systemic effect		281 mg/kg bw/day		
General Population - Long Term - Local effect			0.1 mg/m³	
General Population - Long Term - Systemic effect	168.6 mg/kg bw/day	168.6 mg/kg bw/day		

2,2-bis(bromomethyl)propane-1,3-diol (3296-90-0)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Acute Short term - Systemic effect			0.82 mg/m³	
General Population - Long Term - Systemic effect	0.058 mg/kg bw/day		0.2 mg/m³	

Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect			4 mg/m³	

cobalt octoate (136-52-7)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			235.1 µg/m³	

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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		1 mg/kg bw/day	3.6 mg/m³	

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Acute Short term - Systemic effect			12.25 mg/m³	
Workers - Long Term - Systemic effect		8.33 mg/kg bw/day	12.25 mg/m³	
General Population - Long Term - Systemic effect	0.75 mg/kg bw/day	3.571 mg/kg bw/day		

Predicted No Effect Concentration (PNEC)

PNEC Component		
Aluminum hydroxide (21645-51-2)		
Exposure	Type	PNEC
	PNEC STP	20 mg/L

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

diantimony trioxide (1309-64-4)		
Exposure	Type	PNEC
Marine water	PNEC Aqua	0.0113 mg/L
Fresh water	PNEC Aqua	0.113 mg/L
	PNEC STP	2.55 mg/L
Fresh water	PNEC Sediment	11.2 mg/kg sediment dw
Marine water	PNEC Sediment	2.24 mg/kg sediment dw
	PNEC Soil	37 mg/kg soil dw

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

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
Secondary Poisoning	PNEC Oral	60000 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

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.106 mg/L
Marine water	PNEC Aqua	0.011 mg/L
	PNEC STP	10 mg/L
Fresh water	PNEC Sediment	307.16 mg/kg sediment dw
Marine water	PNEC Sediment	30.72 mg/kg sediment dw
	PNEC Soil	1.234 mg/kg soil dw

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)

Exposure	Type	PNEC
Marine water	PNEC Aqua	0.001 mg/L
Fresh water	PNEC Aqua	0.006 mg/L
	PNEC STP	10 mg/L
Fresh water	PNEC Sediment	0.996 mg/kg sediment dw
Marine water	PNEC Sediment	0.1 mg/kg sediment dw
	PNEC Soil	0.196 mg/kg soil dw

8.2. Exposure Controls

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

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

Environmental exposure controls	Do not allow material to contaminate ground water system.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Property	Values	Remark
Physical state	Liquid	
Colour	off-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
Lower	0,9 -1,1%	Values related to styrene
Vapour pressure	6 hPa	20°C
Vapour density	3.6	Values related to styrene
Density	1.5 g/cm3	20°C
Specific Gravity		No data available
Bulk density		No data available
Water solubility	Insoluble in water	
Solubility in other solvents	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	233 - 300 mm2/s	25°C
Viscosity, dynamic	350 - 450 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

Reactivity Product may ignite and burn at temperatures exceeding the flash point

10.2. Chemical stability

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

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

10.5. Incompatible materials

Materials to avoid	Strong oxidizing agents, Peroxides, Reducing agents

10.6. Hazardous decomposition Products

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

Acute toxicity

Inhalation	Harmful: danger of serious damage to health by prolonged exposure through inhalation Irritating to respiratory system

Ingestion Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation	Read-across (Analogy)
Aluminum hydroxide 21645-51-2	> 2000 mg/kg bw (Rat) OECD 423		> 2.3 mg/L air (Rat, aerosol) 4h OECD 403, EPA 40 CFR 158	
Styrene 100-42-5	5000 mg/kg (Rat)	> 2000 mg/kg bw (Rat) 24h OECD 402	11.8 mg/L (Rat) 4h CSR	
diantimony trioxide 1309-64-4		> 8300 mg/kg bw (168h) (Rabbit) No guideline followed	> 5.2 mg/L air (Rat) 4h OECD 403, EU Method B.2	
Zinc borate 138265-88-0	> 4100 mg/kg bw (Rat)	> 2000 mg/kg bw (Rat)		
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	
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	
cobalt octoate 136-52-7	3129 mg/kg/bw (Rat) OECD 425	> 2000 mg/kg bw (Rat) OECD 402		
2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	> 2000 mg/kg bw (Rat) OECD 420	> 2000 mg/kg bw (Rat) 24h OECD 402, EU Method B.3		

Skin corrosion/irritation

Chemical Name	Skin corrosion/irritation	Read-across (Analogy)

Aluminum hydroxide 21645-51-2	No skin irritation No skin corrosion rabbit OECD 404	
Styrene 100-42-5	Irritating to skin in vivo assay rabbit	
diantimony trioxide 1309-64-4	No skin irritation in vivo assay rabbit	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	No skin irritation in vivo assay rabbit OECD 404	
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	
cobalt octoate 136-52-7	No skin corrosion in vitro study OECD 431 EU Method B. 40	
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	Moderate skin irritation in vivo assay rabbit similar to OECD 404 EPA OTS 798.4470	
2,2''-[(1-methylethylidene)bis(4,1-phenyle neoxymethylene)]bisoxirane 1675-54-3	Mild skin irritation in vivo assay rabbit OECD 404 EU Method B.4	

Serious Eye Damage/Eye Irritation

Chemical Name	Serious Eye Damage/Eye Irritation	Read-across (Analogy)
Aluminum hydroxide 21645-51-2	No eye irritation in vivo assay rabbit OECD 405	
Styrene 100-42-5	Irritating to eyes in vivo assay rabbit	
diantimony trioxide 1309-64-4	No eye irritation in vivo assay rabbit OECD 405 EU Method B.5	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	No eye irritation in vivo assay (rabbit) OECD 405	
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	

cobalt octoate 136-52-7	Moderate eye irritation OECD 437 EU Method B.47 Irritating to eyes rabbit OECD 405	
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	Mild eye irritation in vivo assay (rabbit) similar to OECD 405	
2,2''-[(1-methylethylidene)bis(4,1-phenyle neoxymethylene)]bisoxirane 1675-54-3	No eye irritation in vivo assay rabbit OECD 405 EU Method B.5	

Respiratory or skin sensitisation May cause sensitisation by skin contact

Chemical Name	Respiratory or skin sensitisation	Read-across (Analogy)
Aluminum hydroxide 21645-51-2	Does not cause skin sensitization Does not cause respiratory sensitization in vivo assay guinea pig OECD 406 EPA OPPTS 870.2600	
Styrene 100-42-5	Does not cause skin sensitization Does not cause respiratory sensitization CSR	
diantimony trioxide 1309-64-4	Does not cause skin sensitization in vivo assay guinea pig OECD 406	
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	
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	
cobalt octoate 136-52-7	May cause sensitisation by skin contact in vivo assay mouse OECD 429	
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	May cause sensitisation by skin contact in vivo assay guinea pig OECD 406	
2,2''-[(1-methylethylidene)bis(4,1-phenyle neoxymethylene)]bisoxirane	May cause sensitisation by skin contact in vivo assay	

1675-54-3	mouse OECD 429 EPA OPPTS 870.2600 EU Method B.42	

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	
diantimony trioxide 1309-64-4	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	
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	
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	
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
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	positive (S. typhimurium TA 1535) negative (S. typhimurium TA 1537, TA 98 and TA 100) In vitro gene mutation study in bacteria OECD 471	

Chemical Name	In vitro Mammalian Cell Gene Mutation Test	Read-across (Analogy)
Aluminum hydroxide 21645-51-2	negative In vitro gene mutation study in mammalian cells mouse OECD 476	
Styrene 100-42-5	Ambiguous In vitro gene mutation study in mammalian cells hamster OECD 476	
diantimony trioxide 1309-64-4	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	
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
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	negative In vitro gene mutation study in mammalian cells hamster OECD 476	

Chemical Name	In vitro Mammalian Chromosome Aberration Test	Read-across (Analogy)
Styrene 100-42-5	positive Chromosome aberration test in vitro OECD 473 OECD 479	
diantimony trioxide 1309-64-4	positive Chromosome aberration test in vitro OECD 473	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative Chromosome aberration test in vitro OECD 473	

in vivo assay

Chemical Name	Unscheduled DNA Synthesis (UDS)	Read-across (Analogy)
Aluminum hydroxide 21645-51-2	negative rat OECD 474	
Styrene 100-42-5	negative mouse OECD 486 OECD 474	
diantimony trioxide 1309-64-4	negative mouse OECD 474	
Reaction products of phosphoryl trichloride and 2-methyloxirane 1244733-77-4	negative mouse OECD 474	
Silica, amorphous, fumed, crystalline-free 112945-52-5	negative rat	
cobalt octoate 136-52-7	negative rat OECD 474 OECD 475	Cas N°: 68956-82-1, 14024-48-7, 10026-24-1
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	negative mouse OECD 476 rat similar to OECD 475	

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

Carcinogenicity

Carcinogenicity				
Aluminum hydroxide (21645-51-2)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD TG 413	rat	LOAEC (toxicity powder) = 50 mg/m³ air NOAEC (toxicity dust) = 50 mg/m³ air	negative

Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD 453	rat	NOAEC systemic (carcinogenicity) >= 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) >= 2000 mg/kg bw /day	positive
Oral	No information available	mouse	LOAEL (carcinogenicity) = 150 mg/kg bw /day	positive

diantimony trioxide (1309-64-4)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	similar to OECD 451	rat	NOAEC (carcinogenicity) 52 weeks > 4.5 mg/m³ air	Limited evidence of a carcinogenic effect

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

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

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)				
Routes of Exposure	Method	Species	Dose	Evaluation
Dermal	OECD 453	mouse	NOEL (dermal effects) = 0.1 mg/kg/application NOEL (toxicity) = 100 mg/kg/application (> 2 years)	negative
Oral	OECD 453	rat	NOAEL (toxicity) male = 15 mg/kg bw/day NOAEL (toxicity) female = 100 mg/kg bw/day	negative

			NOEL (toxicity) male/female = 2 mg/kg bw/day	

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

Reproductive toxicity

Reproductive toxicity				
Aluminum hydroxide (21645-51-2)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 422	rat	NOAEL (reproductive toxicity) = 1000 mg/kg bw/day Read across with Cas N°: 1327-41-9	negative

Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	No information available	rat	NOAEL/LOAEL (fertility) 60d = 100 - 200 mg/kg bw/day	positive
Oral	OECD 422	rat	NOAEL/LOAEL (fertility) 60d = 200 - 400 mg/kg bw/day	positive
Inhalation	OECD 416	rat	NOAEC (P, F1) = 0.64 mg/L air LOAEC (P, F1) = 2.13 mg/L air NOAEC (F2) = 0.21 mg/L air LOAEC (F2) = 0.64 mg/L air (70d)	negative

diantimony trioxide (1309-64-4)				
Routes of Exposure	Method	Species	Dose	Evaluation

Oral		rat	NOAEL testicular toxicity (male) > 1200 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

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&F1) 28d = 30 mg/kg bw/day	positive

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 416	rat	NOEL males (P and F1) = 50 mg/kg bw/day NOEL females (P and F1) = 540 mg/kg bw/day NOEL reproductive effects (F1a, F1b and F2 offspring) = 750 mg/kg bw/day 238d	negative

Developmental Toxicity Suspected of damaging the unborn child.

Developmental Toxicity				
Aluminum hydroxide (21645-51-2)				
Routes of Exposure	Method	Species	Dose	Evaluation

Oral	OECD 414	rat	NOAEL (embryotixicity/teratogenic ity) = 266 mg/kg bw/day	negative

Styrene (100-42-5)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	No information available	rat	NOAEC/LOAEC (maternal toxicity + developemental toxicity) >50d = 1.08 - 2.15 mg/L air	positive
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

diantimony trioxide (1309-64-4)				
Routes of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD 414	rat	LOAEC (maternal toxicity) 20d = 2.6 mg/m³ air NOAEC (developmental toxicity) 20d = 6.3 mg/m³ 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

Silica, amorphous, fumed, crystalline-free (112945-52-5)				
Routes of Exposure	Method	Species	Dose	Evaluation

Oral	OECD 414	rat	NOAEL (maternal toxicity) = 1350 mg/kg bw/day NOAEL (teratogenicity) = 1350 mg/kg bw/day	negative

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Routes of Exposure	Method	Species	Dose	Evaluation
Dermal	EPA OTS 798.4420	rat	NOAEL (maternal & developmental toxicity) = 200 mg/kg bw/day NOEL (dermal irritation) = 10 mg/kg bw/day 20 days	negative
Dermal	similar to OECD 414	rat	NOAEL (developmental & maternal) toxicity) = 200 mg/kg bw/day	negative
Oral	OECD 414 EPA OPPTS 870.3700	rat	NOAEL (embryo-fetal survival, development & maternal toxicity) 14d = 1000 mg/kg/day	negative
Oral	OECD 414 EPA OPPTS 870.3700	rabbit	NOAEL (maternal toxicity and for embryo-fetal survival and development) = 375 mg/kg/day	negative

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)				
Routes of Exposure	Method	Species	Dose	Evaluation
Oral	OECD 414	rat	NOAEL (maternal toxicity) = 180 mg/kg bw/day NOAEL (fetotoxicity) > 540 mg/kg bw/day	negative
Oral	OECD 414	rabbit	NOAEL (maternal toxicity) = 60 mg/kg bw/day	negative

Specific target organ toxicity - single exposure:

May cause irritation of respiratory tract

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				
Aluminum hydroxide (21645-51-2)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	OECD 407	rat	NOAEL (28d) = 300 mg/kg bw	
Inhalation	Read-across (Analogy) with Aluminium powder and Aluminium oxide dust OECD 413	hamster	NOAEC (dust) = 70 mg/m³ air	
Inhalation	OECD 412	rat	NOAEC (aerosol) = 3 mg/m³ air LOAEC (aerosol) = 28 mg/m³ air	

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	

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	

diantimony trioxide (1309-64-4)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	No information available	rat	NOAEL (male) 90d = 1686 mg/kg bw/day NOAEL (female) 90d = 1879 mg/kg bw/day	
Inhalation	similar to OECD 452	rat	NOAEC >= 0.51 mg/m³ air LOAEC (impaired lung clearance) >= 4.5 mg/m³ air 1 year	

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	
Inhalation	OECD 413	rat	NOEC = 1.3 mg/m³ air NOEC < 1.3 mg/m³ air 90d	
Dermal	No information available	rabbit	NOAEL >= 10000 mg/kg bw/day	

cobalt octoate (136-52-7)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	Read-across (Analogy) cobalt dichloride hexahydrate OECD 408	rat	NOAEL (90d) = 3 mg/kg bw/day	

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Routes of Exposure	Method	Species	Dose	Remarks
Oral	OECD 408	rat	NOEL (systemic toxicity) = 100 mg/kg/day (males) NOEL (systemic toxicity) = 300 mg/kg/day (females) NOEL (irritant effects in stomach) = 100 mg/kg/day (males & females) 13 weeks	
Dermal	OECD 411	rat	NOEL (male/female) = 1 mg/kg bw/day LOEL (male/female) = 10 mg/kg bw/day 5 days/week for 13 weeks	

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)				
Routes of Exposure	Method	Species	Dose	Remarks
Dermal	similar to OECD 410	rat	NOEL (male) = 10 mg/kg bw/day NOAEL (female) = 100 mg/kg bw/day 2 weeks	
Oral	OECD 408 EPA OPPTS 870.3100 EU Method B.26	rat	NOAEL (14 weeks) = 50 mg/kg bw/day	
Dermal	OECD 411 EPA OPP 82-3 Directive (87/302/EEC)	rat	NOAEL & NOEL = 10 mg/kg/application	

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

Do not flush into surface water or sanitary sewer system

Acute aquatic toxicity – Component

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Aluminum hydroxide 21645-51-2	EC50 (72h) > 100 mg/L (Pseudokirchnerella subcapitata) OECD 201	EC50 (46h) > 100 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 100 mg/L (Salmo trutta) OECD 203	
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
diantimony trioxide 1309-64-4	EC50 (72h) = 206 mg/L (Pseudokirchnerella subcapitata) NOEC (72h) = 100 mg/L (Pseudokirchnerella subcapitata) OECD Guideline 201	LC50 (96h) = 1.77 mg/L (Chlorohydra viridissimus) NOEC (96h) = 1.11 mg/L (Chlorohydra viridissimus) LOEC (96h) = 1.5 mg/L Chlorohydra viridissimus Read across with N°Cas : 10025-91-9 No guideline followed	LC50 (96h) = 6.9 mg/L (Pargus major) Read across with N°Cas : 12208-13-8	EC50 (4h) = 27 mg/L (activated sludge) NOEC (4h) = 2.55 mg/L (activated sludge) Read across with Cas N° : 10025-91-9 ISO DIS 9509
Zinc borate 138265-88-0		EC50 (48h) = 76 mg/L (Daphnia magna Straus)	LC50 (96h) = 2.4 mg/L (Rainbow trout)	

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
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	
cobalt octoate 136-52-7	EC50 (72h) = 144 µg Codiss./L (Pseudokirchneriella subcapitata) NOEC (72h) = 32.2 µg./L (Pseudokirchneriella subcapitata) LOEC (72h) = 52.7 µg Codiss./L (Pseudokirchneriella subcapitata) OECD 201		LC50 (96h) = 1.512 mg/L (Oncorhynchus mykiss) NOEC (96h) = 0.939 mg/L (Oncorhynchus mykiss) LOEC (96h) = 1.577 mg/L (Oncorhynchus mykiss) ASTM guideline (1996)	EC10 (30 min) = 3.73 mg/L (Activated sludge) EC50 (30 min) = 120 mg/L (Activated sludge) Read across with Cas N°: 7646-79-9 OECD 209
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	IC50 (72h) = 843.75 mg/L (Pseudokirchneriella subcapitata) NOEC (72h) = 500 mg/L (Pseudokirchneriella subcapitata) OECD 201	EL50 (48h) = 7.2 mg/L (Daphnia magna) NOELR (48h) = 1.8 mg/L (Daphnia magna) OECD 202	LL50 (96h) > 100 mg/L (Oncorhynchus mykiss) NOEC (96h) > 100 mg/L (Oncorhynchus mykiss) OECD 203, EU Method C.1	EC50 (180 min) > 100 mg/L (Activated sludge, domestic) OECD 209
2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	EC50 (72h) > 11 mg/L (Scenedesmus capricornutum) NOEC (72h) = 4.2 mg/L (Scenedesmus capricornutum) Similar to EPA-660/3-75-009	LC50 (48h) = 1.8 mg/L (Daphnia magna) OECD 202	LC50 (96h) = 2 mg/L (Oncorhynchus mykiss) OECD 203	IC50 (3h) > 100 mg/L (Industrial activated sludge) No guideline followed

Chronic aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Aluminum hydroxide 21645-51-2	NOEC (72h) >= 0.004 mg/L (Pseudokirchnerella subcapitata) OECD 201		NOEC (96h) > 48.2 mg/L (Pimephales promelas)	
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		
diantimony trioxide 1309-64-4		LC50 (21d) = 4.77 mg/L (Daphnia magna) EC50 (21d) = 3.82 mg/L (Daphnia magna) NOEC (21d) = 3.13 mg/L (Daphnia magna) LOEC (21d) = 5.86 mg/L (Daphnia magna) Read across with N°Cas : 10025-91-9 OECD Guideline 211	NOEC (28d) = 1.13 - 2.31 mg/L (Pimephales promelas) Read across with N°Cas : 10025-91-9 No guideline followed	
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		
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2		EL50 (21d) immobilisation = 75 mg/L (Daphnia magna) EL50 (21d) reproduction = 64 mg/L (Daphnia magna) LOELR (21d) = 100 mg/L (Daphnia magna) NOELR (21d) = 56 mg/L (Daphnia magna) OECD 211, EU Method C.20		

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3		NOEC (21d) = 0.3 mg/L (Daphnia magna) LOEC (21d) = 1 mg/L (Daphnia magna) Similar to OECD 211		

Effects on terrestrial organisms – Component

Acute toxicity				
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Acute toxicity	Test Method	Species	Values	Remarks
Other plants	OECD 208	Lactuca sativa Avena sativa	EC50 (21-22d) > 1000 mg/kg soil dw all plants NOEC (21-22d) = 1000 mg/kg soil dw	

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	
plants	OECD 208	Sinapis alba	NOEC (21d) = 17 mg/kg soil dw	
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	

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Chronic toxicity	Method	Species	Values	Remarks
Toxicity to invertebrates	OECD 207 OECD 222	Eisenia foetida	LC50 (28d) > 1000 mg/kg soil dw NOEC (28d) = 1000 mg/kg soil dw	
Toxicity to soil dwelling organisms.	OECD 216 EU Method C.21	Soil	EC50 (28d) > 1000 mg/kg soil dw NOEC (28d) = 1000 mg/kg soil dw	

Chronic toxicity				
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)				
Other organisms relevant to the environment	Test Method	Species	Values	Remarks
Long term toxicity of organisms living in the sediment	OECD 218	Chironomus riparius	EC50 (28d) emergence rate & development time > 792 mg/kg sediment dw NOEC (28d) emergence rate = 105 mg/kg sediment 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
cobalt octoate 136-52-7	60% (> 10d), OECD 301 B	Readily biodegradable
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	87 % (28d) Activated sludge OECD 301 F	Readily biodegradable
2,2''-[(1-methylethylidene)bis(4,1-phenyle neoxymethylene)]bisoxirane 1675-54-3	82 % (28d) OECD 301F	Not readily biodegradable

12.3. Bioaccumulative potential

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

diantimony trioxide (1309-64-4)		
Method	Species	Bioconcentration factor (BCF)
No data available		5.6 L/Kg

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

2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)		
Method	Species	Bioconcentration factor (BCF)
QSAR	Calculation method	31

Chemical Name	log Pow

Styrene 100-42-5	3
diantimony trioxide 1309-64-4	1.63
Zinc borate 138265-88-0	0.19
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
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	3.77
2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	3.242

12.4. Mobility in soil

Chemical Name	LogKoc	Koc
Styrene 100-42-5	2.55	352
2,2-bis(bromomethyl)propane-1,3-diol 3296-90-0	< 1.25	< 17.8
2,2''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	2.65	445

12.5. Results of PBT and vPvB

Chemical Name	PBT	vPvB
Aluminum hydroxide 21645-51-2	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).
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).
diantimony trioxide 1309-64-4	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).
Zinc borate 138265-88-0	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).	

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).
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).
Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. 68609-97-2	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''-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane 1675-54-3	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).

12.6. Endocrine disrupting properties

Endocrine disrupting properties No information available

12.7. Other Adverse Effects

None known.

13. Disposal Considerations

13.1. Waste Treatment Methods

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

Contaminated packaging

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

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. UN number or ID number

ADR/RID	UN1866
IMDG/IMO	UN1866
ICAO/IATA	UN1866
ADN	UN1866

14.2. UN proper shipping name

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. 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. Packing group

ADR/RID	III
IMDG/IMO	III
ICAO/IATA	III
ADN	III

14.5. Environmental hazards

ADR/RID	No
IMDG/IMO	No
Marine pollutant	No
ICAO/IATA	No
AND	No

14.6. 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

Special precautions 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, nº 3; Column 1, nº 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

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

H319 - Causes serious eye irritation

H332 - Harmful 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

H411 - Toxic to aquatic life with long lasting effects

H412 - Harmful to aquatic life with long lasting effects

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

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