STRONGHOLD
GRP ROOFING SYSTEM

STRONGHOLD GRP RESIN

SAFETY DATA SHEET

In accordance with Regulation (EC) No 1907/2006

Revision date: 28th January 2022

CONTENTS

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product name:	Stronghold Resin 102
Chemical name:	Unsaturated polyester resin
Product form:	Mixture

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

Relevant identified uses:	Resin for Glass Reinforced Plastic (GRP) Roofing. Contact the manufacturer for any other application.

1.3 Details of the Supplier of the safety data sheet

Manufacturer/Supplier:	The Glass Fibre Roofing Company Ltd.
Address:	Unit 33 Pontygwindy Industrial Estate, Caerphilly CF83 3HU
Telephone number:	02920 888020
E-mail:	sales@strongholdgrp.co.uk

This document is available online at http://www.strongholdgrp.co.uk

1.4 Emergency telephone numbers

UK Telephone number:	02920 888020 (Office hours only)
UK Urgent medical problem:	111 (NHS Direct)
UK Life-threatening emergency:	999

SECTION 2: Hazards Identification

2.1 Classification according to Regulation (EC) No 1272/2008 (CLP)

Skin corrosion/irritation:	Category 2
Serious eye damage/eye irritation:	Category 2
Skin Sensitization:	Category 1 - sub-category 1A
Reproductive Toxicity:	Category 2
Specific Target Organ Toxicity (single exposure):	Category 3
Specific Target Organ Toxicity (repeated exposure):	Category 1
Carcinogenicity:	Category 2
Chronic Aquatic Toxicity:	Category 1
Flammable liquids:	Category 3

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Hazard pictograms:

Signal word:	Danger

Hazard statements:

Flammable liquid and vapour	H226
Causes skin irritation	H315
May cause an allergic skin reaction	H317
Causes serious eye irritation	H319
May cause respiratory irritation	H335
Suspected of causing cancer	H351
Suspected of damaging the unborn child	H361d
Causes damage to organs through prolonged or repeated exposure if inhaled	H372
Very toxic to aquatic life with long lasting effects	H410
Contains alpha-methyl styrene - May produce an allergic reaction	EUH208

Precautionary statements - Prevention:

Keep away from heat/sparks/open flames/ hot surfaces – no smoking	P210
Take precautionary measures against static discharge	P243
Do not breathe vapour	P260
Avoid release to the environment	P273
Wear protective gloves/protective clothing/eye protection/face protection	P280

Precautionary statements - Response:

IF ON SKIN Wash with plenty of soap and water	P302+P352
IF INHALED Remove victim to fresh air and keep at rest in a position comfortable for breathing	P304+P340
IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing	P305+P351+P338

Precautionary statements - Storage:

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

Other hazards: No information available.

SECTION 3: Composition/Information on Ingredients

3.1 Substances

Chemical name	CAS-No. EC-No. REACH Registration No.	% Weight	GHS Classification
Styrene	100-42-5 202-851-5 01-2119457861-32	25 – 50	Flam. Liq. 3 (H226) Repr. 2 (H361d) Acute Tox. 4 (Inhalation (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)
Silica, amorphous, fumed	112945-52-5 231-545-4 01-2119379499-16	< 0.5	
Alpha-methyl styrene	98-83-9 202-705-0 01-2119472426-35	0.1 < 1	Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) Skin Sens. 1B (H317) Eye Irrit. 2 (H319) STOT SE 3 (H335) Repr. 2 (H361d) Aquatic Chronic 2 (H411)

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	64742-82-1 919-446-0 01-2119458049-33	< 0.25	Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) STOT SE 3 (H336) STOT RE 1 (H372) Aquatic Chronic 2 (H411) (EUH066)
Cobalt octolate	136-52-7 205-250-6 01-2119524678-29	~ 0.1	Skin Sens. 1A (H317) Eye Irrit 2 (H319) Repr. 1B (H360Fd) Aquatic Acute 1 (H400) Aquatic Chronic 3 (H412)
Hydroquinone	123-31-9 204-617-8 01-2119524016-51	~ 0.02	Acute Tox. 4 (H302) Eye Dam. 1 (H318) Skin Sens. 1 (H317) Muta. 2 (H341) Carc. 2 (H351) Aquatic acute 1 (H400) Aquatic Chronic 1 (H410)

SECTION 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 info.

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:	Danger of serious damage to health by prolonged exposure through inhalation. Irritating to respiratory system.
Ingestion:	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.

SECTION 5: Firefighting Measures

5.1 Extinguishing media

Suitable extinguishing media:	Dry chemical, Foam, Carbon dioxide (CO2), (closed systems).
Unsuitable extinguishing media:	DO NOT use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Fire hazard:	Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
Explosion hazard:	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

Protective equipment for firefighters:	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.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:	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 and section 12 for more information.

SECTION 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 the workday. Provide regular cleaning of equipment, work area and clothing.

7.2 Conditions for safe storage, 3 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 (Glass Reinforced Plastic) containers.

7.3 Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls / Personal Protection

8.1 Control parameters

Occupational exposure limits

Chemical name	TWA – 8 hours	STEL – 15 mins
Styrene 100-42-5	100 ppm – 430 mg/m^3	250 ppm 1080 mg/m^3

Derived no effect level (DNEL)
Workers

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Inhalation	306 mg/m^3	289 mg/m^3		85 mg/m^3
Dermal		406 mg/kg bw/day		

Styrene 100-42-5
Consumers

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				2.1 mg/kg bw/day
Inhalation	182.7 mg/m³	174.2 mg/m³		10.2 mg/m³
Dermal				343 mg/kg bw/day

Predicted no effect concentration (PNEC)

Type	Exposure	PNEC
PNEC Aqua	Fresh Water	0.028 mg/L
	Marine water	0.014 mg/L
	Intermittent use / release	0.04 mg/L
PNEC Sediment	Fresh Water	0.614 mg/kg.dw
	Marine water	0.307 mg/kg.dw
PNEC Soil	Terrestrial compartment	0.2 mg/kg.dw
PNEC STP	STP microorganisms	5 mg/L

8.2 Exposure controls

Occupational exposure limits

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 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 filler conforming lo EN 14387, APF40 < 1 hour. APF 200> 1 hour) I Type A(2)/P3 in combination with Particulates filler conforming to EN 143,if exposed to dust.

Eye protection: Safety glasses with side-shields. DO NOT wear contact lenses.

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

Hand protection: Wear chemically resistant gloves (tested to EN 374) in combination with "basic" employee training.

Environmental exposure controls

Environmental exposure controls: DO NOT allow material to contaminate ground water system.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Property	Values	Remark
Appearance	Blue	
Physical state	Liquid	
Particle size		No data available
Odour	Styrene	
Odour threshold	0.15 ppm	Values related to styrene
pH		No data available
Melting point/range	-30°C	Values related to styrene
Freezing point		No data available
Boiling point	145°C	Values related to styrene
Flash point	32°C	Values related to styrene
Evaporation rate		No data available
Flammability limits in air		
Upper	6.1 – 6.8 %	Values related to styrene
Lower	0.9 – 1.1 %	Values related to styrene
Vapour pressure	1 kPa @ 25°C	Values related to styrene
Vapour density	3.6	Values related to styrene
Density	1.03 – 1.10 g/cm³ @ 20°C	Values related to styrene
Water solubility	Insoluble in water	No data available
Partition coefficient	3	Values related to styrene
n-octanol/water		
Solubility in other solvents	Medium – Organic solvents Medium – Phthalates	Values related to styrene
Auto ignition temperature	490 °C	Values related to styrene
Decomposition temperature		No data available
Viscosity, kinematic	583 – 777 mm²/s @ 25°C	
Viscosity, dynamic	600 800 mPa s @ 25°C	
Explosive properties		Not applicable
Oxidizing properties		Not applicable

Other safety information

Property	Values	Remark
Solubility in other solvents	Soluble in most organic solvents	Values related to styrene

SECTION 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

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

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.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

Inhalation:	Danger of serious damage to health by prolonged exposure through inhalation. Irritating to respiratory system.
Ingestion:	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Chemical name	LD50 Oral	LD50 Dermal	ATE CLP (dust, mist)
Styrene 100-42-5	> 5000 mg/kg (Rat)	>2000 mg/kg bw (Rat) 24h OECD 402	11.8 mg/L (Rat) 4h CSR
Silica, amorphous, fumed, crystalline-free 112945-52-5	> 5000 mg/kg (Rat)	>5000 mg/kg (Rabbit)	> 0.14 mg/L (Rat) 4h (analytical) OECD 403
Alpha-methyl styrene 98-83-9	4900 mg/kg (Rat) OECD GHS	14560 mg/kg bw (Rabbit) OECD GHS	22.85 mg/L (Rat) 6h Vapour 41600 mg/m³ (Rat) 4h Similar to OECD 403

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	>15000 mg/kg bw (Rat) Similar to OECD 401		>13.1 mg/L air (Rat) 4h Similar to OECD 403
Cobalt octolate 136-52-7	3129 mg/kg bw (Rat) OECD 425	>2000 mg/kg bw (Rat) OECD 402	
Hydroquinone 123-31-9	367 mg/kg bw (Rat) OECD 401	>200 mg/kg bw (Rabbit) OECD 402	

Skin corrosion/irritant

Chemical name	Skin corrosion/irritant
Styrene 100-42-5	Irritating to skin In vitro assay Rabbit
Silica, amorphous, fumed, crystalline-free 112945-52-5	No skin irritation Rabbit OECD 404
Alpha-methyl styrene 98-83-9	Mild skin irritation Rabbit Classification of corrosive hazards, Federal register, Vol 37, No 57, 173.240
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	No skin irritation In vitro assay Rabbit OECD 404
Cobalt octolate 136-52-7	No skin corrosion In vitro study OECD 431 EU method B.40
Hydroquinone 123-31-9	No skin irritation

Serious Eye Damage/Eye Irritation

Chemical name	Serious Eye Damage/Eye Irritation
Styrene 100-42-5	Irritating to eyes In vitro assay Rabbit
Silica, amorphous, fumed, crystalline-free 112945-52-5	No eye irritation Rabbit OECD 405
Alpha-methyl styrene 98-83-9	Irritating to eyes Rabbit
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	No eye irritation In vitro assay Rabbit OECD 405

Cobalt octolate 136-52-7	Moderate eye irritation OECD 437 EU method B.47 Irritating to eyes Rabbit OECD 405
Hydroquinone 123-31-9	Risk of serious damage to eyes Severe eye irritation

Respiratory or skin sensitisation

Chemical name	Respiratory or skin sensitisation
Styrene 100-42-5	Does not cause skin sensitization Does not cause respiratory sensitization CSR
Silica, amorphous, fumed, crystalline-free 112945-52-5	Does not cause skin sensitization Does not cause respiratory sensitization
Alpha-methyl styrene 98-83-9	May cause sensitization skin contact Mouse OECD 429 EU method B.42
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	Does not cause skin sensitization In vitro assay Guinea pig OECD 406
Cobalt octolate 136-52-7	May cause skin sensitization by skin contact In vitro assay Mouse OECD 429
Hydroquinone 123-31-9	May cause skin sensitization by skin contact In vitro assay Guinea pig OECD 406

Mutagenic effects
In vitro study

Chemical name	Ames test
Styrene 100-42-5	Ambiguous In vitro gene mutation study in bacteria (S. typhimurium G46, TA1530, TA 1535, TA100, TA98, TA1538, TA1537) OECD 471
Silica, amorphous, fumed, crystalline-free 112945-52-5	Negative In vitro gene mutation study in bacteria OECD 471
Alpha-methyl styrene 98-83-9	Negative In vitro gene mutation study in bacteria (S. typhimurium G46, TA1530, TA 1537, TA98, TA100) (Escherichia coli WP2 uvrA)

Alpha-methyl styrene 98-83-9 (continued.)	Similar to OECD 471 OECD 472
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	Negative In vitro gene mutation study in bacteria (S. typhimurium TA1535, TA 1537, TA98, TA100, TA1538) Similar to OECD 471
Cobalt octolate 136-52-7	Negative In vitro gene mutation study in bacteria (S. typhimurium TA1535, TA 1537, TA98, TA100, TA102) OECD 471
Hydroquinone 123-31-9	Negative In vitro gene mutation study in bacteria OECD 471

Chemical name	**In vitro mammalian cell mutation test**
Styrene 100-42-5	Ambiguous In vitro gene mutation study in mammalian cells hamster OECD 476
Silica, amorphous, fumed, crystalline-free 112945-52-5	Negative In vitro gene mutation study in mammalian cells OECD 476
Alpha-methyl styrene 98-83-9	Negative In vitro gene mutation study in mammalian cells hamster Similar to OECD 476
Cobalt octolate 136-52-7	Negative In vitro gene mutation study in mammalian cells mouse OECD 476
Hydroquinone 123-31-9	Positive In vitro gene mutation study in mammalian cells mouse OECD 476

Chemical name	**In vitro mammalian cell mutation test**
Styrene 100-42-5	Positive Chromosome aberration test in vitro OECD 473 OECD 479
Silica, amorphous, fumed, crystalline-free 112945-52-5	Negative Chromosome aberration test in vitro OECD 473
Alpha-methyl styrene 98-83-9	Negative Chromosome aberration test in vitro Hamster

Alpha-methyl styrene 98-83-9 (continued.)	Similar to OECD 473
Cobalt octolate 136-52-7	Negative Chromosome aberration test in vitro Similar to OECD 473
Hydroquinone 123-31-9	Positive Chromosome aberration test in vitro OECD 483

In vivo assay

Chemical name	Unscheduled DNA Synthesis (UDS)
Styrene 100-42-5	Negative mouse OECD 486 OECD 474
Silica, amorphous, fumed, crystalline-free 112945-52-5	Negative rat
Alpha-methyl styrene 98-83-9	Negative Mouse Similar to OECD 474
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	Negative mouse Similar to OECD 474 OECD 475
Cobalt octolate 136-52-7	Negative rat OECD 474 OECD 475

Chemical name	European Union
Hydroquinone 123-31-9	Muta. 2

Carcinogenicity
Styrene (100-42-5)

Exposure route	Method	Species	Does	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	positive

Inhalation (continued.)	OECD 453	Mouse	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

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

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 453	Rat	NOAEL = 1800 – 3200 mg/kg bw / day	negative

Alpha-methyl styrene 98-83-9

Exposure route	Method	Species	Does	Evaluation
Inhalation	Similar to OECD 451	Mouse Rat	LOAEC (male/female) 105 weeks = 100 ppm	negative

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1

Exposure route	Method	Species	Does	Evaluation
Inhalation	Similar to OECD 453	Rat	NOAEC (female) >= 2200 mg/m³ air NOAEC (male) = 138 mg/m³ air	negative

Hydroquinone 123-31-9

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 453	Mouse	LOAEL = 100 mg/kg bw / day NOEL = 50 mg/kg bw/day	negative

Reproductive toxicity
Styrene (100-42-5)

Exposure route	Method	Species	Does	Evaluation
Inhalation	No information available	Rat	LOAEL = 100 mg/kg bw / day NOEL = 50 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

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

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 415	Rat	NOAEL = 497 mg/kg bw / day	negative

Alpha-methyl styrene 98-83-9

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 422	Rat	NOEL (parental female) = 200 mg/kg bw/day NOEL (parental males) = 1000 mg/kg bw/day	negative
Inhalation	Similar to OECD 416	Rat	NOAEC (systemic toxicity) male/female = 0.21 mg/L NOAEC (reproductive toxicity) male/female = 2.1 mg/L	negative

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1

Exposure route	Method	Species	Does	Evaluation
Inhalation	Similar to OECD 421	Rat	NOAEC (F1) = 1720 mg/m³	negative

Cobalt octolate 136-52-7

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 422	Rat	NOAEL (P&F1) 28d = 30 mg/kg bw/day	positive

Hydroquinone 123-31-9

Exposure route	Method	Species	Does	Evaluation
Oral	EPA OTS 798.4700	Rat	NOAEL (parental toxicity) = 15 mg/kg bw / day LOAE (reproductive effects) = 150 mg/kg bw/day	negative

Developmental toxicity

Suspected of damaging the unborn child.
Styrene (100-42-5)

Exposure route	Method	Species	Does	Evaluation
Inhalation	No information available	Rat	NOAEC/LOAEC (maternal toxicity + developmental 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

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

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 414	Rat	NOAEL (maternal toxicity) = 1350 mg/kg bw / day NOAEL (teratogenicity) = 1350 mg/kg bw/day	negative

Alpha-methyl styrene 98-83-9

Exposure route	Method	Species	Does	Evaluation
Inhalation	Similar to OECD 414	Rat	LOAEC (maternal toxicity) = 297 ppm NOAEC (developmental toxicity) = 600 ppm LOAEL (maternal toxicity) = 180 mg/kg bw/day NOAEL (developmental toxicity) = 3000 mg/kg bw/day NOAEC (maternal toxicity) = 600 ppm	positive

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1

Exposure route	Method	Species	Does	Evaluation
Inhalation	Similar to OECD 414	Rat	NOAEL (maternal toxicity) >= 5220 mg/m³ air NOAEC (developmental toxicity) >= 5220 mg/m³ air	negative

Hydroquinone 123-31-9

Exposure route	Method	Species	Does	Evaluation
Oral	OECD 414	Rat	NOEL (maternal toxicity and developmental toxicity) = 100 mg/kg bw / day	negative
Oral	EPA OTS 798.4900	Rabbit	NOEL (maternal toxicity) = 25 mg/kg bw / day NOEL (developmental toxicity) = 75 mg/kg bw / day	negative

Specific target organ toxicity (Single exposure)

May cause irritation of the respiratory tract.

Alpha-methyl styrene 98-83-9

Exposure route	Method	Species	Does	Remarks
Inhalation	No information available		C >= 600 ppm	

Hydroquinone 123-31-9

Exposure route	Method	Species	Does	Remarks
Oral	No information available	Mouse	NOAEL (90d) = 50 mg/kg bw / day	

Specific target organ toxicity (Repeated exposure)

Causes damage to organs through prolonged or repeated exposure, target organs(s):
central nervous system, ears.

Styrene (100-42-5)

Exposure route	Method	Species	Does	Remarks
Inhalation	OECD 412	Rat Mouse	NOAEC (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	
Oral	No information available	Rat	NOAEC (toxicity) = 1000 mg/kg bw/day LOAEL (toxicity) = 2000 mg/kg bw/day	
Oral	No information available	Mouse	NOAEC (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	

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

Exposure route	Method	Species	Does	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	

Alpha-methyl styrene 98-83-9

Exposure route	Method	Species	Does	Remarks
Inhalation	Similar to OECD 413	Rat	NOAEC (male/female) 14 weeks = 300 ppm	

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1

Exposure route	Method	Species	Does	Remarks
Oral	Similar to OECD 408	Rat	NOAEL (female) 30d = 1056 mg/kg bw LOAEL (male) 30d = 116 mg/kg bw	
Inhalation	Similar to OECD 413	Rat	NOAEC (female) = 3950 mg/m³ LOAEC (male) = 1975 mg/m³ LOAEC (female) = 7400 mg/m³	
Dermal	Similar to OECD 411	Rat	NOAEL (systemic) >= 495 mg/kg bw/day	

Cobalt octolate 136-52-7

Exposure route	Method	Species	Does	Remarks
Oral	Read-across (analogy) cobalt dichloride hexahydrate OECD 408	Rat	NOAEL (30d) = 3 mg/kg bw/day	

Cobalt octolate 136-52-7

Exposure route	Method	Species	Does	Remarks
Oral	OECD 453	Rat	NOAEL (chronic toxicity) = 25 mg/kg bw/day	
Dermal	OECD 411	Rat	NOAEL (male) = 73.9 mg/kg bw/day NOAEL (female) 109.6 mg/kg bw/day	

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

Other information: None

SECTION 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 system.

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) = 4.7mg/L (Daphnia magna) NOEC = 1.9 mg/L (Daphnia magna) OECD202	LC50 (96h) = 4.02 – 10 mg/L (Pimephales promelas) OECD 203	EC (30min) = 500mg/L (Activaled sludge of a predominantly domestic sewage) 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	
Alpha-methyl styrene 98-83-9	EC50 (72h) = 11.441 mg/L (Desmodesmus subspicatus) NOEC (72h) = 2.26 mg/L (Desmodesmus subspicatus) LOEC (72h) = 8.3 mg/L (Desmodesmus subspicatus) OECO201, EU Method C.3	EC50 (48h) = 1.645mg/l (Daphnia magna) EC10 (48h) = 0.99 mg/L (Daphnia magna) NOEC (48h) = 0.64 mg/L (Daphnia magna) LOEC (48h) = 1.21 mg/L (Daphnia magna) OECD 202, EU Method C.2	LC50 (96h) = 2.97 mg/L (Danio rerio) NOEC (96h) = 2.13 mg/L (Danio rerio) LOEC (96h) = 3.19 mg/L (Danio rerio) OECD203,EU Method C.1	EC10 (3h) = 661.5 mg/L (Activated sludge of a predominantly domestic sewage) EC50 (3h) > 2000 mg/L (Activated sludge of a predominantly domestic sewage) OECD 209, EU Method C .11
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	EL50 (72h) = 4.1 mg/L (Pseudoikrchneriella subcapitata) NOELR (72h) = O.76 mg/ L (Pseudoikrchneriella subcapitata) OECD 201	EL50 (48h) = 10 - 22 mg/L (Daphnia magna) OECD 202	LL50 (96h) = 10- 30 mg/L (Oncorhynchus mykiss) OECD 203	
Cobalt octolate 136-52-7	EC50 (72h) = 144 µg Codiss./L (Pseudoikrchneriella subcapitata) NOEC (72h) = 32.2 µg./L (Pseudoikrchneriella subcapitata) LOEC (72h) = 52.7 µg Codiss./L (Pseudoikrchneriella 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 No: 7 646-79-9 OECD 209
Hydroquinone 123-31-9	ErC50 (72)h = 0.330 mg/L NOEC (72h) (growth rate) = 0. 019 mg/L (Pseudokirchnerella subcapitata) OECD 201	EC50 (48h) = 0.134 mg/L (Daphnia magna) OECD 202 NOEC (21d) = 0.0057 mg/L (Daphnia magna) OECD 211	LC50 (96h) = 0.638 mg/L (Oncorhynchus mykiss) OECD 203	

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)		

Styrene 100-42-5 (continued.)		LOEC (21 d) = 2.06 mg/L (Daphnia magna) EC50 (21 d) =1.88 mg/L (Daphnia magna) OECD 203		
Alpha-methyl styrene 98-83-9		NOEC (21 d) = 0.401 mg/L (Daphnia magna) LC50 (21 d) = 1.56 mg/L (Daphnia magna) EC50 (21 d) = 1.11 mg/L (Daphnia magna) OECD 211		
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1		EC5O (21 d) = 0.328 mg/L (Daphnia magna) OECD 211		
Cobalt octolate 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 (21 d) = 60.8 µg/L (Daphnia magna) LC50 (21 d) = 121.3 mg/L (Daphnia magna) LOECR (21 d) = 93.3 µg Codiss./L (Daphnia magna) OECD 211		

Effects on terrestrial organisms – Component information
Chronic toxicity

Styrene (100-42-5)

Chronic toxicity	Method	Species	Values	Remarks
Toxicity to invertebrates	OECD 207	Eisenia foetida	LC5O (14d) = 120m g/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	

12.2 Persistence and degradability

Chemical name	Degradation	Evaluation
Alpha-methyl styrene 98-83-9	Stable (pH= 4, 7, 9) 25”C OECD 111	Stable

Chemical name	Degradation	Evaluation
Styrene (100-42-5)	97% (20d) similar to OECO 301D	Readily biodegradable
Alpha-methyl styrene 98-83-9	21% (28d) OECD 30 1F, E U Method C.4-D 56% (28d) OECD 301D, EU Method C.4-E	Not readily biodegradable
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	74.7% (28d) (Activated sludge, domestic, non-adapted) OECD 301 F	Readily biodegradable
Cobalt octolate 136-52-7	60% (> 10d), OECD 301 B	Readily biodegradable
Hydroquinone 123-31-9	70 % (14d) OECD 301C	Readily biodegradable

12.3 Bio accumulative potential

Chemical name	Method	Species	Bio concentration factor (BCF)
Styrene 100-42-5	Calculation method		74
Alpha-methyl styrene 98-83-9	OECD 305 C	Cyprinus carpio	BCF (56d) = 15 – 140 (25°C) C = 0.3 mg/L BCF (56d) = 12 – 113 (25°C) C = 0.03 mg/L
Hydroquinone 123-31-9	No data available	Leuciscus idus melanotus	40 (3d)

Chemical name	Log Pow
Styrene 100-42-5	3
Alpha-methyl styrene 98-83-9	3.48
Hydroquinone 123-31-9	0.56

12.4 Mobility in soil

Chemical name	Log Koc	Koc
Styrene (100-42-5)	2.55	352
Alpha-methyl styrene 98-83-9	2.84	892
Hydroquinone 123-31-9	0.97 - 1.7	

12.5 Results of PBT and vPvB assessment

Chemical name	PBT	vPvB
Styrene (100-42-5)	This substance is not considered to be persistent, bio accumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bio accumulating (vPvB).

Silica, amorphous, fumed, crystalline-free 112945-52-5	This substance is not considered to be persistent, bio accumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bio accumulating (vPvB).
Alpha-methyl styrene 98-83-9	This substance is not considered to be persistent, bio accumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bio accumulating (vPvB).
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 64742-82-1	This substance is not considered to be persistent, bio accumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bio accumulating (vPvB).
Hydroquinone 123-31-9	This substance is not considered to be persistent, bio accumulating nor toxic (PBT).	This substance is not considered to be very persistent nor very bio accumulating (vPvB).

12.6 Other adverse effects

None known

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

Waste from residues / unused:	Dispose in accordance with the European Directives on waste and hazardous waste.
Products:	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 of 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.

SECTION 14: Transport Information

ADR/RID	IMDG/IMO	ICAO/IATA	ADN

14.1 UN Number

UN1866	UN1866	UN1866	UN1866

14.2 UN proper shipping name

UN1866, RESIN SOLUTION, 3, PG III, (D/E)	UN1866, RESIN SOLUTION, 3, PG III, (31 °C c.c.)	UN1866, RESIN SOLUTION, 3, PG III	UN1866, RESIN SOLUTION, 3, PG III

14.3 Transport hazard class

Hazard class 3	Hazard class 3	Hazard class 3	Hazard class 3

14.4 Packing group

III	III	III	III

14.5 Environmental hazards

No	No	No	No

Marine pollutant: No

14.6 Special precautions for user

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

Special precautions for users: No information available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

SECTION 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. 830/2015

Directive 88/642/EEC

Directive 98/24/EC

Directive 1999/92/EC

Directive 2012/18/EU

SECTION 16: Other Information

None.

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, in formation 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 Material Safety Data Sheet