



**SAFETY DATA SHEET**  
according to Regulation (EC) No. 1907/2006

SDS n° : FP18684

**METROFLEX ROOFING RESIN**

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Former date -

Revision date 22-Jun-2022

Version: 1

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

**1.1. Product identifier**

**Product name** METROFLEX FLEXIBLE ROOFING RESIN  
**Chemical Name** Gel Coat polyester for composites.  
**Trade name** METROFLEX FLEXIBLE ROOFING RESIN  
**Pure substance/mixture** Mixture

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

**Identified uses** To form a protective and decorative layer for GRP composites. Contact us before using for food contact application.

**1.3. Details of the supplier of the safety data sheet**

**Supplier** CFSNET Ltd  
United Downs Industrial Park  
St Day, Redruth  
Cornwall TR16 5HY  
Tel: 01209 821028  
sales@cfsnet.co.uk  
www.cfsnet.co.uk

The supplier of the product is, among those indicated above, the one identified on the label and / or in the sales documents

**For further information, please contact**

**E-mail address** sales@cfsnet.co.uk  
**Internet Address** www.cfsnet.co.uk

**1.4. Emergency telephone number**

This telephone number is available 24 hours per day, 7 days per week.	
Europe :	+44 1235 239 670
Middle East/Africa :	+44 1235 239 671
East/South East Asia :	+65 3158 1412
America :	+1 215 207 0061

**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)

**SECTION 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)
Reproductive Toxicity	Category 2 - (H361d)
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**

Contains cobalt octoate, Maleic anhydride, Styrene

**Signal word****Danger****Hazard statements**

H315 - Causes skin irritation  
 H317 - May cause an allergic skin reaction  
 H319 - Causes serious eye irritation  
 H335 - May cause respiratory irritation  
 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

**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

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

**2.3. Other hazards**

PBT/vPvB see section 12.5.

**SECTION 3: Composition/information on ingredients****3.2. Mixtures****Hazardous components**

Chemical Name	EC-No	REACH Registration Number	CAS-No	Weight percent	GHS Classification
Aluminum hydroxide	244-492-7	01-2119529246-39	21645-51-2	> 20	-
Styrene	202-851-5	01-2119457861-32	100-42-5	25 - 30	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)
Titanium dioxide	236-675-5	01-2119489379-17	13463-67-7	< 2	-
Amorphous Silica	231-545-4	01-2119379499-16	7631-86-9	< 1	-
(2-methoxymethylethoxy)propanol	252-104-2	01-2119450011-60	34590-94-8	< 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)
Xylene	215-535-7	01-2119488216-32	1330-20-7	< 0.25	Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) STOT RE 2 (H373)
N,N-dimethyl-p-toluidine	202-805-4	01-2119937766-23	99-97-8	< 0.25	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT RE 2 (H373) Aquatic Chronic 3 (H412)
Maleic anhydride	203-571-6	01-2119472428-31	108-31-6	0.001 - < 0.01	Acute Tox. 4 (H302) Skin Corr. 1B (H314) Skin Sens. 1A (H317) Eye Dam. 1 (H318) Resp. Sens. 1 (H334) STOT RE 1 (H372) STOT RE 2 (H373) (EUH071)

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

#### 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

<b>Skin contact</b>	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes If skin irritation persists, call a physician
<b>Inhalation</b>	Move to fresh air If not breathing, give artificial respiration Consult a physician
<b>Ingestion</b>	Do NOT induce vomiting Rinse mouth. Consult a physician
<b>Protection of first-aiders</b>	Use personal protective equipment See section 8 for more information
<b><u>4.2. Most important symptoms and effects, both acute and delayed</u></b>	
<b>Eye Contact</b>	Irritating to eyes
<b>Skin contact</b>	Irritating to skin May cause sensitisation by skin contact
<b>Inhalation</b>	Harmful: danger of serious damage to health by prolonged exposure through inhalation Irritating to respiratory system
<b>Ingestion</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
<b><u>4.3. Indication of any immediate medical attention and special treatment needed</u></b>	
<b>Notes to physician</b>	No information available

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

<b>Suitable extinguishing media</b>	Dry chemical, Foam, Carbon dioxide (CO <sub>2</sub> ), (closed systems)
<b>Extinguishing Media Which Must not be Used for Safety Reasons</b>	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** Vapours may form explosive mixtures with air. Most vapours are heavier than air. They **from itself, combustion products,** will spread along ground and collect in low or confined areas (sewers, basements, tanks) **Heating or fire can release toxic gas : Carbon monoxide resulting gases**

### **5.3. Advice for firefighters**

<b>Special protective equipment for</b>	Wear self-contained breathing apparatus and protective suit. <b>fire-fighters</b>
<b>Other information</b>	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**

<b>Personal precautions</b>	Remove all sources of ignition Heat, flames and sparks. Take precautionary measures against static charges. Ensure adequate ventilation
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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

## **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 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

## **SECTION 8: Exposure controls/personal protection**

### 8.1. Control parameters

#### Occupational Exposure limits

Chemical Name	European Union	ACGIH OEL (Ceiling)	The United Kingdom	Ireland
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Aluminum hydroxide 21645-51-2			STEL 30 mg/m <sup>3</sup> STEL 12 mg/m <sup>3</sup> TWA 10 mg/m <sup>3</sup> TWA 4 mg/m <sup>3</sup>	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/m <sup>3</sup> TWA 100 ppm TWA 430 mg/m <sup>3</sup>	TWA 20 ppm TWA 85 mg/m <sup>3</sup> STEL 40 ppm STEL 170 mg/m <sup>3</sup>
Titanium dioxide 13463-67-7		TWA 10 mg/m <sup>3</sup>	STEL 30 mg/m <sup>3</sup> STEL 12 mg/m <sup>3</sup> TWA 10 mg/m <sup>3</sup> TWA 4 mg/m <sup>3</sup>	TWA 10 mg/m <sup>3</sup> TWA 4 mg/m <sup>3</sup>
Amorphous Silica 7631-86-9			STEL 18 mg/m <sup>3</sup> STEL 7.2 mg/m <sup>3</sup> TWA 6 mg/m <sup>3</sup> TWA 2.4 mg/m <sup>3</sup>	TWA 6 mg/m <sup>3</sup> TWA 2.4 mg/m <sup>3</sup>
(2-methoxymethylethoxy)propanol 34590-94-8	TWA 50 ppm TWA 308 mg/m <sup>3</sup> S*	TWA 100 ppm	STEL 150 ppm STEL 924 mg/m <sup>3</sup> TWA 50 ppm TWA 308 mg/m <sup>3</sup> Skin	TWA 50 ppm TWA 308 mg/m <sup>3</sup> Skin
cobalt octoate 136-52-7		0.02 mg/m <sup>3</sup>	STEL 0.3 mg/m <sup>3</sup> TWA 0.1 mg/m <sup>3</sup> Sen+	TWA 0.1 mg/m <sup>3</sup> Sensitizer
Xylene 1330-20-7	TWA 50 ppm TWA 221 mg/m <sup>3</sup> STEL 100 ppm STEL 442 mg/m <sup>3</sup> S*	TWA 100 ppm	STEL 100 ppm STEL 441 mg/m <sup>3</sup> TWA 50 ppm TWA 220 mg/m <sup>3</sup> Skin	TWA 50 ppm TWA 221 mg/m <sup>3</sup> STEL 100 ppm STEL 442 mg/m <sup>3</sup> Skin
Maleic anhydride 108-31-6		TWA 0.1 ppm	STEL 3 mg/m <sup>3</sup> TWA 1 mg/m <sup>3</sup> Sen+	TWA 0.25 ppm TWA 1 mg/m <sup>3</sup> Sensitizer

**Special hazards arising from the substance or mixture**

**Biological standards**

Chemical Name	European Union	The United Kingdom	Ireland
Xylene 1330-20-7	-	Methyl hippuric acid in urine: 650 mmol/mol creatinine, end of shift	We are not aware of any national exposure limit.

**Derived No Effect Level (DNEL)**

Derived No Effect Level (DNEL)				
Aluminium hydroxide (21645-51-2)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			3.59 mg/m <sup>3</sup>	
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/m <sup>3</sup>	
Workers - Acute Short Term Local effect			306 mg/m <sup>3</sup>	
Workers - Acute Short term Systemic effect			289 mg/m <sup>3</sup>	
General Population - Acute Short Term - Local effect			182.7 mg/m <sup>3</sup>	
General Population - Acute Short Term - Systemic effect			174.2 mg/m <sup>3</sup>	

General Population - Long Term - Systemic effect	2.1 mg/Kg bw/day	343 mg/Kg bw/day	10.2 mg/m <sup>3</sup>	
<b>Titanium dioxide (13463-67-7)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			10 mg/m <sup>3</sup>	
General Population - Long Term - Systemic effect	700 mg/kg bw/day			
<b>Amorphous Silica (7631-86-9)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term Systemic effect			4 mg/m <sup>3</sup>	
<b>(2-methoxymethylethoxy)propanol (34590-94-8)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term Systemic effect		283 mg/kg bw/day	308 mg/m <sup>3</sup>	
General Population - Long Term - Systemic effect	36 mg/kg bw/day	121 mg/kg bw/day	37.2 mg/m <sup>3</sup>	
<b>cobalt octoate (136-52-7)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Local effect			235.1 µg/m <sup>3</sup>	
General Population - Long Term - Systemic effect	175 µg/kg bw/day			
General Population - Long Term - Local effect			37 µg/m <sup>3</sup>	
<b>ylene (1330-20-7)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term Systemic effect		180 mg/kg bw/day	77 mg/m <sup>3</sup>	
Workers - Acute Short term Systemic effect			289 mg/m <sup>3</sup>	
Workers - Acute Short Term Local effect			289 mg/m <sup>3</sup>	
General Population - Long Term - Systemic effect	1.6 mg/kg bw/day	108 mg/kg bw/day	14.8 mg/m <sup>3</sup>	
General Population - Acute Short Term - Systemic effect			174 mg/m <sup>3</sup>	
General Population - Acute Short Term - Local effect			174 mg/m <sup>3</sup>	
<b>N,N-dimethyl-p-toluidine (99-9-8)</b>				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term Systemic effect		1.186252632 mg/kg bw/day	1.352328 mg/m <sup>3</sup>	
General Population - Long Term - Systemic effect	2.372505263 mg/kg bw/day	0.292521739 mg/kg bw/day	0.3364 mg/m <sup>3</sup>	

Maleic anhydride (108-31-6)				
Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term Systemic effect			0.081 mg/m³	
Workers - Acute Short term Systemic effect			0.2 mg/m³	
Workers - Long Term - Local effect			0.081 mg/m³	
Workers - Acute Short Term Local effect			0.2 mg/m³	

**Predicted No Effect Concentration (PNEC)**

PNEC Component		
<b>Aluminium hydroxide (21645-51-2)</b>		
Exposure	Type	PNEC
	PNEC STP	20 mg/L
<b>Styrene (100-42-5)</b>		
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
<b>Titanium dioxide (13463-67-7)</b>		
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
<b>Amorphous Silica (7631-86-9)</b>		
Exposure	Type	PNEC
Secondary Poisoning	PNEC Oral	60000 mg/kg
<b>(2-methoxymethylethoxy)propanol (34590-94-3)</b>		
Exposure	Type	PNEC
Marine water	PNEC Aqua	1.9 mg/L
Fresh water	PNEC Aqua	19 mg/L



Intermittent use/release	PNEC Aqua	190 mg/L
	PNEC STP	4168 mg/L
Fresh water	PNEC Sediment	70.2 mg/kg sediment dw
Marine water	PNEC Sediment	7.02 mg/kg sediment dw
	PNEC Soil	2.74 mg/kg soil dw
<b>cobalt octoate (136-52-7)</b>		
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
<b>Xylene (1330-20-7)</b>		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.327 mg/L
Marine water	PNEC Aqua	0.327 mg/L
Intermittent use/release	PNEC Aqua	0.327 mg/L
	PNEC STP	6.58 mg/L
Fresh water	PNEC Sediment	12.46 mg/kg sediment dw
Marine water	PNEC Sediment	12.46 mg/kg sediment dw
	PNEC Soil	2.31 mg/kg soil dw
<b>N, N-dimethyl-p-toluidine (99-97-8)</b>		
Exposure	Type	PNEC
Marine water	PNEC Aqua	0.015259 mg/L
Fresh water	PNEC Aqua	0.15259 mg/L
	PNEC STP	4.2863 mg/L
Fresh water	PNEC Sediment	45.37770249 mg/kg sediment dw
Marine water	PNEC Sediment	45.37770249 mg/kg sediment dw
	PNEC Soil	18.67677186 mg/kg soil dw
<b>Maleic anhydride (108-31-6)</b>		
Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.038 mg/L
Intermittent use/release	PNEC Aqua	0.379 mg/L
Marine water	PNEC Aqua	0.004 mg/L
	PNEC STP	44.6 mg/L
Fresh water	PNEC Sediment	0.296 mg/kg sediment dw
Marine water	PNEC Sediment	0.03 mg/kg sediment dw

	PNEC Soil	0.037 mg/kg soil dw
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**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.

**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**

<u>Property</u>	<u>Values</u>	<u>Remark</u>
<b>Physical state Colour</b>	Liquid Variable (This Data Sheet includes all the colours)	
<b>Appearance</b>		
<b>Particle size</b>		No data available
<b>Odour</b>		No data available
<b>Odour Threshold</b>	Styrene	
<b>pH</b>	0.15 ppm	Values related to styrene
<b>pH (as aqueous solution)</b>		No data available
<b>Melting point/range</b>		No data available
<b>Freezing Point</b>	- 30 °C	Values related to styrene
<b>Softening point</b>		No data available
<b>Boiling point</b>		No data available
<b>Flash point</b>	145 °C	Values related to styrene
<b>Flammability Limit in Air</b>	31 °C	Values related to styrene
<b>Upper</b>	6,1 - 6,8%	Values related to styrene
<b>Lower</b>	0,9 -1,1%	Values related to styrene
<b>Vapour pressure</b>	1 kPa	25°C Values related to styrene
<b>Vapour density</b>	3.6	Values related to styrene
<b>Density</b>	1.5 g/cm3	20°C
<b>Specific Gravity</b>		No data available
<b>Bulk density</b>		No data available
<b>Water solubility</b>	Insoluble in water	

<b>Solubility in other solvents</b>	Soluble in most organic solvents	
<b>Partition coefficient: n-octanol/water</b>	3	Values related to styrene
<b>Autoignition temperature</b>	490 °C	Values related to styrene
<b>Decomposition temperature</b>		No data available
<b>Viscosity, kinematic</b>	2667 - 8000 mm <sup>2</sup> /s	25°C
<b>Viscosity, dynamic</b>	4000 - 12000 mPa.s	25°C

**9.2. Other information****Information with regards to physical hazard classes**

Property	Values	Remark
<b>Explosive</b>	No data available s	
<b>Flammable gases</b>		No data available
<b>Aerosols</b>		No data available
<b>Oxidising gases</b>		No data available
<b>Gases under pressure</b>		No data available
<b>Flammable liquids</b>		No data available
<b>Flammable solids</b>		No data available
<b>Pyrophoric liquids</b>		No data available
<b>Pyrophoric solids</b>		No data available
<b>Self-heating substances and Substances and mixtures which, in contact with water, emit flammable</b>	No data available mixtures	No data available gases
<b>Oxidising liquids</b>		No data available
<b>Oxidising solids</b>		No data available
<b>Oxidising Properties</b>		No data available
<b>Organic peroxides</b>		No data available
<b>Corrosive to metals</b>		No data available
<b>Desensitised explosives</b>		No data available

**Other safety characteristics**

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

**SECTION 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** Incomplete combustion and thermolysis produces potentially toxic gases such as carbon products monoxide and carbon dioxide

**SECTION 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**

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

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation	Read-across (Analogy)
Aluminium 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	
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	
Amorphous Silica 7631-86-9	> 5000 mg/kg bw (Rat) OECD 401	> 5000 mg/kg (Rabbit)	> 0.14 mg/L air (Rat) 4h (analytical) OECD 403	
(2-methoxymethylethoxy)propanol 34590-94-8	> 5000 mg/kg bw (Rat) Similar to OECD 401	9510 mg/kg bw(Rabbit) 24h Similar to OECD 402	LC0 (7h) > 275 ppm (1667 mg/m <sup>3</sup> ) (Rat) Similar to OECD 403	
cobalt octoate 136-52-7	3129 mg/kg/bw (Rat) OECD 425	> 2000 mg/kg bw (Rat) OECD 402		
Xylene 1330-20-7	3523 mg/kg bw (Rat, male) > 4000 mg/kg bw (Rat, female) Similar to EU Method B.1	> 4200 mg/kg bw (Rabbit) No Guideline followed	29091 mg/m <sup>3</sup> (Rat) 4h Similar to EU Method B.2	
N,N-dimethyl-p-toluidine 99-97-8	139 mg/kg bw (Mouse)	> 2000 mg/kg bw (Rabbit) OECD 402	1400 mg/m <sup>3</sup> (Rat) 4h	
Maleic anhydride 108-31-6	1090 mg/kg bw (Rat) OECD 401	2620 mg/kg bw (Rabbit) No guideline followed		

**Skin corrosion/irritation**

Chemical Name	Skin corrosion/irritation	Read-across (Analogy)
Aluminium hydroxide 21645-51-2	No skin irritation No skin corrosion rabbit OECD 404	
Styrene 100-42-5	Irritating to skin in vivo assay rabbit	
Titanium dioxide 13463-67-7	No skin irritation in vivo assay rabbit OECD 404 EPA OPPTS 870.2500	

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Amorphous Silica 7631-86-9	No skin irritation rabbit OECD 404	
(2-methoxymethylethoxy)propanol 34590-94-8	No skin irritation in vivo assay rabbit similar to OECD 404	
cobalt octoate 136-52-7	No skin corrosion in vitro study OECD 431 EU Method B. 40	
Xylene 1330-20-7	Moderate skin irritation No skin corrosion in vivo assay rabbit similar to EU Method B.4	
N,N-dimethyl-p-toluidine 99-97-8	Mild skin irritation in vivo assay rabbit OECD 404	
Maleic anhydride 108-31-6	Causes severe skin burns and eye damage in vivo assay rabbit similar to OECD 404	

**Serious Eye Damage/Eye Irritation**

Chemical Name	Serious Eye Damage/Eye Irritation	Read-across (Analogy)
Aluminium hydroxide 21645-51-2	No eye irritation in vivo assay rabbit OECD 405	
Styrene 100-42-5	Irritating to eyes in vivo assay rabbit	
Titanium dioxide 13463-67-7	No eye irritation in vivo assay rabbit OECD 405 EU Method B.5 EPA OPPTS 870.2400	
Amorphous Silica 7631-86-9	No eye irritation rabbit OECD 405	
(2-methoxymethylethoxy)propanol 34590-94-8	No eye irritation in vivo assay	
cobalt octoate 136-52-7	Moderate eye irritation OECD 437 EU Method B.47 Irritating to eyes rabbit OECD 405	
Xylene 1330-20-7	Moderate eye irritation in vivo assay rabbit	
N,N-dimethyl-p-toluidine 99-97-8	No eye irritation in vivo assay rabbit	

Maleic anhydride 108-31-6	Causes severe eye damage in vivo assay (rabbit) similar to OECD 405	
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**Respiratory or skin sensitisation** May cause sensitisation by skin contact

Chemical Name	Respiratory or skin sensitisation	Read-across (Analogy)
Aluminium 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	
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	
Amorphous Silica 7631-86-9	Does not cause skin sensitization Does not cause respiratory sensitization	
(2-methoxymethylethoxy)propanol 34590-94-8	Does not cause skin sensitization in vivo assay	
cobalt octoate 136-52-7	May cause sensitisation by skin contact in vivo assay mouse OECD 429	
Xylene 1330-20-7	Does not cause skin sensitization in vivo assay mouse OECD 429	
N,N-dimethyl-p-toluidine 99-97-8	Does not cause skin sensitization in vivo assay rabbit	
Maleic anhydride 108-31-6	May cause sensitisation by skin contact in vivo assay mouse similar to OECD 429 May cause sensitisation by inhalation rat	

**Mutagenic Effects 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	
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	

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Amorphous Silica 7631-86-9	negative In vitro gene mutation study in bacteria OECD 471	
(2-methoxymethylethoxy)propanol 34590-94-8	negative In vitro gene mutation study in bacteria (Escherichia coli WP2 uvrA) similar to 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
Xylene 1330-20-7	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98, TA 100, TA 1538) similar to OECD 471	
N,N-dimethyl-p-toluidine 99-97-8	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98 and TA 100) OECD 471	
Maleic anhydride 108-31-6	negative In vitro gene mutation study in bacteria (S. typhimurium TA 1535, TA 1537, TA 98 and TA 100) similar to OECD 471	
<b>Chemical Name</b>	<b>In vitro Mammalian Cell Gene Mutation Test</b>	<b>Read-across (Analogy)</b>
Aluminium 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	
Titanium dioxide 13463-67-7	negative In vitro gene mutation study in mammalian cells mouse OECD 476	
Amorphous Silica 7631-86-9	negative In vitro gene mutation study in mammalian cells OECD 476	
(2-methoxymethylethoxy)propanol 34590-94-8	negative In vitro gene mutation study in mammalian cells rat similar to OECD 482	
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
Xylene 1330-20-7	negative In vitro gene mutation study in mammalian cells hamster mouse similar to EU Method B.19 EU Method B.17	

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Maleic anhydride 108-31-6	negative In vitro gene mutation study in mammalian cells hamster OECD 476	
<b>Chemical Name</b>	<b>In vitro Mammalian Chromosome Aberration Test</b>	<b>Read-across (Analogy)</b>
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	
Amorphous Silica 7631-86-9	negative Chromosome aberration test in vitro OECD 473	
(2-methoxymethylethoxy)propanol 34590-94-8	negative Chromosome aberration test in vitro hamster similar to OECD 473	
Xylene 1330-20-7	negative Chromosome aberration test in vitro hamster similar to EU Method B.10	
N,N-dimethyl-p-toluidine 99-97-8	negative Chromosome aberration test in vitro hamster QSAR	

**in vivo assay**

<b>Chemical Name</b>	<b>Unscheduled DNA Synthesis (UDS)</b>	<b>Read-across (Analogy)</b>
Aluminium hydroxide 21645-51-2	negative rat OECD 474	
Styrene 100-42-5	negative mouse OECD 486 OECD 474	
Titanium dioxide 13463-67-7	negative rat OECD 474	
Amorphous Silica 7631-86-9	negative rat	
cobalt octoate 136-52-7	negative rat OECD 474 OECD 475	Cas N°: 68956-82-1, 14024-48-7, 10026-24-1
Xylene 1330-20-7	negative mouse rat similar to OECD 478	
Maleic anhydride 108-31-6	negative rat similar to OECD 475	

**Carcinogenicity****Carcinogenicity****Aluminium hydroxide (21645-51-2)**



Exposure routes	Method	Species	Dose	Evaluation
Inhalation	OECD TG 413	rat	LOAEC (toxicity powder) = 50 mg/m <sup>3</sup> air NOAEC (toxicity dust) = 50 mg/m <sup>3</sup> air	negative
<b>Styrene (100-42-5)</b>				
Exposure routes	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
<b>Amorphous Silica (7631-86-9)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 453	rat	NOAEL = 1800 - 3200 mg/kg bw/day	negative
<b>Xylene (1330-20-7)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	similar to EU Method B.32	mouse rat	500 - 1000 mg/kg/bw/day (103 weeks)	negative
<b>Maleic anhydride (108-31-6)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	similar to OECD 451	rat	NOAEL (carcinogenicity) >= 100 mg/kg bw/day NOEL (systemic toxicity) = 10 mg/kg bw/day 2 years	negative
<b>Reproductive toxicity</b>				
<b>Reproductive toxicity</b>				
<b>Aluminium hydroxide (21645-51-2)</b>				
Exposure routes	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
<b>Styrene (100-42-5)</b>				
Exposure routes	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
<b>Amorphous Silica (7631-86-9)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 415	rat	NOAEL = 497 mg/kg bw/day	negative
<b>cobalt octoate (136-52-7)</b>				
Exposure routes	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
<b>Xylene (1330-20-7)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Inhalation	similar to EPA OPPTS 870.3800	rat	NOAEC (vapour) reproductive and developmental toxicity > 500 ppm (2171 mg/m <sup>3</sup> )	negative
<b>N,N-dimethyl-p-toluidine (99-97-8)</b>				
Exposure routes	Method	Species	Dose	Evaluation
No data available	QSAR	rat	LOEL (F2) = 72.97666 mg/kg bw/day	negative
<b>Maleic anhydride (108-31-6)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	similar to OECD 416	rat	NOAEL (fertility) P/F1 = 55 mg/kg bw/day LOAEL (systemic) P/F1 = 20 mg/kg bw/day LOEL (local) P = 20 mg/kg bw/day	negative
<b>Developmental Toxicity</b> Suspected of damaging the unborn child.				
<b>Developmental Toxicity</b>				
<b>Aluminium hydroxide (21645-51-2)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 414	rat	NOAEL (embryotoxicity/teratogenicity) = 266 mg/kg bw/day	negative
<b>Styrene (100-42-5)</b>				
Exposure routes	Method	Species	Dose	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 $\geq$ 2.56 mg/L air	negative
Inhalation	OECD 414	rabbit	NOAEC (maternal toxicity + developmental toxicity) 6-18d = 2.56 mg/L air	negative
<b>Titanium dioxide (13463-67-7)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 414	rat	NOAEL (maternal & developmental toxicity) 20d = 1000 mg/kg bw/day	negative
<b>Amorphous Silica (7631-86-9)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 414	rat	NOAEL (maternal toxicity) = 1350 mg/kg bw/day NOAEL (teratogenicity) = 1350 mg/kg bw/day	negative
<b>(2-methoxymethylethoxy)propanol (34590-94-8)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Inhalation	EPA OTS 798.4350	rat	NOAEL (maternal tox/teratogenicity) 6-15d = 300 ppm	negative
<b>Xylene (1330-20-7)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Inhalation	similar to OECD 414	rat	NOAEC (maternal and developmental toxicity) = 2171 mg/m <sup>3</sup> NOAEC (teratogenicity) $\geq$ 8684 mg/m <sup>3</sup>	negative
<b>Maleic anhydride (108-31-6)</b>				
Exposure routes	Method	Species	Dose	Evaluation
Oral	similar to OECD 414	rat	NOAEL (maternal toxicity) = > 140 mg/kg bw/day NOAEL (teratogenicity) $\geq$ 140 mg/kg bw/day NOAEL (fetotoxicity) $\geq$ 140 mg/kg bw/day	negative

**Specific target organ toxicity - exposure** May cause irritation of respiratory tract **single**

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

**STOT - repeated exposure**

**Aluminium hydroxide (21645-51-2)**

Exposure routes	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/m <sup>3</sup> air	

Inhalation	OECD 412	rat	NOAEC (aerosol) = 3 mg/m <sup>3</sup> air LOAEC (aerosol) = 28 mg/m <sup>3</sup> air	
<b>Styrene (100-42-5)</b>				
Exposure routes	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	

<b>Titanium dioxide (13463-67-7)</b>				
Exposure routes	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	
<b>Amorphous Silica (7631-86-9)</b>				
Exposure routes	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/m <sup>3</sup> air NOEC < 1.3 mg/m <sup>3</sup> air 90d	
Dermal	No information available	rabbit	NOAEL >= 10000 mg/kg bw/day	
<b>(2-methoxymethylethoxy)propanol (34590-94-8)</b>				
Exposure routes	Method	Species	Dose	Remarks

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Oral	KANPOGYO No.700, YAKUHATSU No. 1039.61 and KIKYKU No. 1014	rat	NOEL/NOAEL (4 weeks) = 200/1000 mg/kg	
Inhalation	similar to OECD 413	rat	NOAEL (13 weeks) = 200 ppm	
Dermal	similar to OECD 411	rabbit	NOAEL (90d) = 2850 mg/kg bw/day	
<b>cobalt octoate (136-52-7)</b>				
Exposure routes	Method	Species	Dose	Remarks
Oral	Read-across (Analogy) cobalt dichloride hexahydrate OECD 408	rat	NOAEL (90d) = 3 mg/kg bw/day	
<b>Xylene (1330-20-7)</b>				
Exposure routes	Method	Species	Dose	Remarks
Oral	similar to EU Method B.32	rat	LOAEL (90d) male = 150 mg/kg bw/day NOAEL (90d) female = 150 mg/kg bw/day	
<b>N,N-dimethyl-p-toluidine (99-97-8)</b>				
Exposure routes	Method	Species	Dose	Remarks
Oral	QSAR	rat	LOEL (effect on body weight decrease) 91d = 201.7862 mg/kg bw/day	
Inhalation	QSAR	rat	LOEL (rat) = 67.28391 mg/kg bw/day	
<b>Maleic anhydride (108-31-6)</b>				
Exposure routes	Method	Species	Dose	Remarks
Oral	similar to OECD 408	rat	LOAEL (90 & 183d) = 250 mg/kg bw/day	
Oral	similar to OECD 409	dogs	NOAEL (90d) = 60 mg/kg bw/day	
Oral	similar to OECD 452	rat	NOEL (2 years) = 10 mg/kg bw/day LOEL (2 years) = 32 mg/kg bw/day	
Inhalation	similar to OECD 412	rat	LOAEC (local) = 0.01 mg/L air LOAEC (systemic) = 0.01 mg/L air 1 month	

**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 sewer system

**Acute aquatic toxicity - Component Information**

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Aluminium 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
Titanium dioxide 13463-67-7	EC50 (72h) > 100 mg/L (Pseudokirchnerella subcapitata) NOEC (72h) >= 100 mg/L (Pseudokirchnerella 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
Amorphous Silica 7631-86-9		EL50 (24h) >= 1000 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 10000 mg/L (Brachydanio rerio) OECD 203	
(2-methoxymethylethoxy)propanol 34590-94-8	EC50 (72h) > 969 mg/L (Pseudokirchnerella subcapitata) OECD 201	LC50 (48h) = 1919 mg/L (Daphnia magna) Similar to OECD 202	LC50 (96h) > 1000 mg/L (Poecilia reticulata) OECD 203	EC10 (18h) = 4168 mg/L (Pseudomonas putida) No guideline followed
cobalt octoate 136-52-7	EC50 (72h) = 144 µg Codiss./L (Pseudokirchnerella subcapitata) NOEC (72h) = 32.2 µg./L (Pseudokirchnerella subcapitata) LOEC (72h) = 52.7 µg Codiss./L (Pseudokirchnerella 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
Xylene 1330-20-7	EC50 (73h) = 2.2 mg/L (Pseudokirchnerella subcapitata) OECD 201	IC50 (24h) = 1 mg/L (Daphnia magna) OECD Guideline 202	LC50 (96h) = 2.6 mg/L (Oncorhynchus mykiss) OECD 203	EC50 (3h) > 157 mg/L (Activated sludge, domestic) NOEC (3h) = 157 mg/L (Activated sludge, domestic) OECD 209
N,N-dimethyl-p-toluidine 99-97-8	EC50 (72h) = 24.37002 mg/L (Pseudokirchnerella subcapitata) QSAR	EC50 (48h) = 23.758 mg/L (Daphnia magna) QSAR	LC50 (96h) = 46 mg/L (Pimephales promelas)	EC50 (48h) = 42.86365 mg/L (Tetrahymena thermophila) QSAR
Maleic anhydride 108-31-6	EC50 (72h) = 74.35 mg/L (Pseudokirchnerella subcapitata) OECD 201	EC50 (48h) = 42.81 mg/L (Daphnia magna) OECD 202	LC50 (96h) = 75 mg/L (Lepomis macrochirus, Oncorhynchus mykiss) EPA-660/3-75-009	EC10 (18h) = 44.6 mg/L (Pseudomonas putida) DIN 38412-8

**Chronic aquatic toxicity - Component Information**

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Aluminium 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		
(2-methoxymethylethoxy)propanol 34590-94-8		NOEC (22d) >= 0.5 mg/L (Daphnia magna) Similar to OECD 211		
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		
Xylene 1330-20-7	NOEC (73h) = 0.44 mg/L (Pseudokirchnerella subcapitata) OECD 201			
N,N-dimethyl-p-toluidine 99-97-8			LC50 (14d) = 24.892 mg/L (Fish)	
Maleic anhydride 108-31-6		NOEC (21d) = 10 mg/L (Daphnia magna) EC50 (21d) = 77 mg/L (Daphnia magna) No guideline followed		

**Effects on terrestrial organisms - Component Information**

Acute toxicity				
Xylene (1330-20-7)				
Acute toxicity	Test Method	Species	Values	Remarks
Other plants	OECD 208	Lactuca sativa	EC50 (14d) > 1000 µg/kg	
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	
(2-methoxymethylethoxy)propanol (34590-94-8)				
Chronic toxicity	Method	Species	Values	Remarks
plants	OECD 227	Grossypium hirsutum	NOEC (21d) = 250 g/L	

**12.2. Persistence and degradability**

Chemical Name	Biodegradation	Evaluation
Styrene 100-42-5	87% (20d) similar to OECD 301D	Readily biodegradable
(2-methoxymethylethoxy)propanol 34590-94-8	96 % (28d) DOC removal, 75 % (10d) OECD 301F	Readily biodegradable
cobalt octoate 136-52-7	60% (> 10d), OECD 301 B	Readily biodegradable
Xylene 1330-20-7	87.8% (28d) Read across with benzoic acid, sodium salt OECD 301 F	Readily biodegradable
N,N-dimethyl-p-toluidine 99-97-8	50 % (38d)	Readily biodegradable
Maleic anhydride 108-31-6	> 90 % (25d) Read across with : benzoic acid, sodium salt OECD 301 B	Readily biodegradable

**12.3. Bioaccumulative potential**

Bioconcentration factor (BCF)		
<b>Styrene (100-42-5)</b>		
Method	Species	Bioconcentration factor (BCF)
Calculation method		74
<b>Xylene (1330-20-7)</b>		
Method	Species	Bioconcentration factor (BCF)
No data available	Oncorhynchus mykiss	25.9 (56d)
<b>N,N-dimethyl-p-toluidine (99-97-8)</b>		
Method	Species	Bioconcentration factor (BCF)
Calculation method	Fish	33



Chemical Name	log Pow
Styrene 100-42-5	3
(2-methoxymethylethoxy)propanol 34590-94-8	0.0043
Xylene 1330-20-7	3.12 - 3.2
N,N-dimethyl-p-toluidine 99-97-8	2.81
Maleic anhydride 108-31-6	-2.61

#### 12.4. Mobility in soil

Chemical Name	LogKoc	Koc
Styrene 100-42-5	2.55	352
Xylene 1330-20-7	2.73	537
N,N-dimethyl-p-toluidine 99-97-8	126.2	-
Maleic anhydride 108-31-6	1.63	42

#### 12.5. Results of PBT and vPvB assessment

Chemical Name	PBT	vPvB
Aluminium 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).
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).
Amorphous Silica 7631-86-9	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).
(2-methoxymethylethoxy)propanol 34590-94-8	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).
Xylene 1330-20-7	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).
N,N-dimethyl-p-toluidine 99-97-8	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).
Maleic anhydride 108-31-6	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).

#### 12.6. Other adverse effects None known.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Waste from Residues/Unused Products****ods**

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.

**SECTION 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
ADN	No

**14.6. Special precautions for user****ADR/RID**

Classification Code	F1
Tunnel restriction code	(D/E)
Limited quantity IMDG/IMO	5 L

EmS	F-E, S-E
Limited quantity ICAO/IATA	5 L

ERG Code	3L
Limited quantity ADN	10 L

Classification Code	F1
Limited quantity ventilation	5 L VE01

**Special precautions for users**

Special precautions	No information available
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**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

**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

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.

**SECTION 16: Other information**

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

H226 - Flammable liquid and vapour

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters airways

H311 - Toxic in contact with skin

H312 - Harmful in contact with skin

H314 - Causes severe skin burns and eye damage

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H331 - Toxic if inhaled

H332 - Harmful if inhaled

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

H335 - May cause respiratory irritation

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

H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H412 - Harmful to aquatic life with long lasting effects

EUH071 - Corrosive to the respiratory tract

**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

**Revision date**

22-Jun-2022

**Revision Note**

**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**

## Scenario 1: Manufacturing of UP/VE resins and formulated resins (Gelcoat, Colour Paste, Putty, Bonding paste/Adhesive) (ES1)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.

The following scenarios contribute to the scenario *Manufacturing of UP/VE resins and formulated resins (Gelcoat, Colour Paste, Putty, Bonding paste/Adhesive)*.

*This document has been prepared using REACH-Practical-Guide-on-Safe-Use-Information-for-Mixtures-under-REACH-The-LCID-Methodology, considering exposure scenario of relevant raw materials contained in the mixture.*

The corresponding release to the environment, exposure of workers resulting from these contributing scenarios is summarized below.

Table 1. Description of ES 1

<b>Free short title</b>	Manufacturing of UP/VE resins and formulated resins (Gelcoat, Colour Paste, Putty, Bonding paste/Adhesive) (ES1)
<b>Systematic title based on use descriptor</b>	ERC 2; PROC 1, 3, 4, 5, 8a, 8b, 9, 15
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 2 – Formulation into mixture
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	<p>PROC 1 - Chemical production in closed process</p> <p>PROC 3 - Use in closed batch process (synthesis or formulation)</p> <p>PROC 4 - Chemical production where opportunity for exposure arises</p> <p>PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact)</p> <p>PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities</p> <p>PROC 8b - Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> <p>PROC 9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</p> <p>PROC 15 - Use of laboratory reagents in small scale laboratories</p>

### Contributing Scenario (1) controlling environmental exposure for ERC 2

#### Operational conditions (referred to styrene)

Daily amount used at site	45700 kg/day (referred to styrene)
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Release times per year	300 days/year (justification: Continuous release)
Local freshwater dilution factor	41
Local marine water dilution factor	100
Release fraction to air from process	0.102 %
Release fraction to wastewater from process	0.00063 %
Release fraction to soil from process	0.0025 %
Fraction tonnage to region	10 %
Fraction used at main source	60 %
STP	yes
River flow rate	18000 m <sup>3</sup> /day
Municipal sewage treatment plant discharge	2000000 L/day
<b>Other modified EUSES values (referred to styrene)</b>	
Fraction released to agricultural soil (Femis.agric)	0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))
Fraction released to industrial soil (Femis.ind)	0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))
Fraction released to waste water (Femis.water)	0.00063 % (justification: EU Risk Assessment Report, 2002)
Fraction released to air (Femis.air)	0.102 % (justification: EU Risk Assessment Report, 2002)
Fraction used at main source	60 % (justification: Value adopted to account for Worst case European manufacturing site )
Fraction of emission directed to water by local STP (Fstp.water)	0.081 - (justification: Efficiency STP 91.9%)

### Contributing Scenario (2) controlling industrial worker exposure for PROC 1

Name of contributing scenario	1 - Use in closed process, no likelihood of exposure
Scenario subtitle	Use in contained batch processes. Closed processes
<b>Qualitative Risk Assessment</b>	
General	Use in semi-automated and predominantly enclosed filling lines. Provide a good standard of general ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %

Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (>30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	

Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Bulk transfers. Receipt and storage of raw materials in bulk or as packed goods, indoor and outdoor; Raw material assembly and charging; dispensing of liquids and solids via pipeline;
<b>Qualitative Risk Assessment</b>	
General	Use in semi-automated and predominantly enclosed filling lines; Use bulk or semi-bulk handling systems. Drain down and flush system prior to equipment break-in or maintenance. Provide extract ventilation to points where emissions occur. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	15 min.-1 hour
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	



Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (>30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Dissolving linear UP/VE polymer in blending vessel (or dissolver)
<b>Qualitative Risk Assessment</b>	
General	Use in semi-automated and predominantly enclosed filling lines; Drain down and flush system prior to equipment break-in or maintenance. Apply vessel entry procedures including use of forced supplied air. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %

Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Equipment cleaning and maintenance. Cleaning and maintenance of blending vessel, road tankers etc.
<b>Qualitative Risk Assessment</b>	

General	<p>Use in semi-automated and predominantly enclosed filling lines.</p> <p>Drain or remove substance from equipment prior to break-in or maintenance.</p> <p>Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).</p> <p>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.</p> <p>Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures.</p> <p>Use suitable chemically resistant gloves, tested to EN374.</p> <p>Use suitable eye protection.</p> <p>In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.</p>
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation: see details on sec.8 of SDS</b>	
Protective gloves	Gloves APF 5 80 %

Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (6) controlling industrial worker exposure for PROC 4</b>	
<b>Name of contributing scenario</b>	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Scenario subtitle	Material transfers. All internal transport. Raw material assembly and charging / raw material dispensing of liquids and solids manually from bulk storage or packed goods into blending tank.
<b>Qualitative Risk Assessment</b>	
General	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Provide extract ventilation to points where emissions occur. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	Good (>30%)

Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur

Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (7) controlling industrial worker exposure for PROC 4</b>	
<b>Name of contributing scenario</b>	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Scenario subtitle	Process sampling.
<b>Qualitative Risk Assessment</b>	
General	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour): Avoid dip sampling. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	15 min.-1 hour
Frequency of use	5 days / week

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	Good (>30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (8) controlling industrial worker exposure for PROC 5</b>	
<b>Name of contributing scenario</b>	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Drum/batch transfers; Pouring from small containers; Transfer from/pouring from containers; Mixing operations (open systems). Mixing liquid and solid components / into final formulated resin in blending vessel
<b>Qualitative Risk Assessment</b>	
General	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). Keep lids of containers closed during blending. Ensure good work practices are implemented. Provide basic employee training to prevent/minimize exposures. Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.

<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (9) controlling industrial worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Equipment cleaning and maintenance. Cleaning and maintenance of pipes, pumps, filters, etc.
<b>Qualitative Risk Assessment</b>	

General	<p>Drain down system prior to equipment break-in or maintenance. Drain or remove substance from equipment prior to break-in or maintenance.</p> <p>Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures</p> <p>Wear suitable coveralls to prevent exposure to the skin.</p> <p>Use suitable eye protection.</p> <p>Use suitable chemically resistant gloves, tested to EN374. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.</p>
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )



### Contributing Scenario (10) controlling industrial worker exposure for PROC 8A

<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Disposal of wastes. Handling of non cured waste; Waste management / handling and storage of waste for removal for off-site treatment or for on-site treatment like incineration and/or biological waste water treatment
<b>Qualitative Risk Assessment</b>	

General	Provide a good standard of general ventilation. Controlled ventilation means air is supplied or removed by a powered fan. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Dispose of empty containers and wastes safely. Dispose of waste in accordance with environmental legislation. Use suitable chemically resistant gloves, tested to EN374. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness. Use suitable eye protection.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	<1 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	Indoors/outdoor
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
<b>Contributing Scenario (11) controlling industrial worker exposure for PROC 8b</b>	
<b>Name of contributing scenario</b>	8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Scenario subtitle	Bulk transfers. All activities related to transport finished product to customer. Dispensing final UP/VE resin (linear UP/VE polymer + styrene + additives) into road tanker
<b>Qualitative Risk Assessment</b>	

General	Fill containers/cans at dedicated fill points supplied with local extract ventilation. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	

Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (12) controlling industrial worker exposure for PROC 9</b>	
<b>Name of contributing scenario</b>	9 -Transfer of chemicals into small containers (dedicated filling line)
Scenario subtitle	Bulk transfers. All activities related to transport finished product to customer. Dispensing final UP/VE resin (linear UP/VE polymer + styrene + additives) / into storage tank, IBC, drum or pail.
<b>Qualitative Risk Assessment</b>	
General	Fill containers/cans at dedicated fill points supplied with local extract ventilation. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable chemically resistant gloves, tested to EN374. Use suitable eye protection.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>

<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (13) controlling industrial worker exposure for PROC 15</b>	
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories
Scenario subtitle	Laboratory activities. All laboratory activities. Quality control work of samples from reactor and blending vessel. R&D work including handling of samples from 1 kg to 1 drum.
<b>Qualitative Risk Assessment</b>	
General	Carry out in a vented booth or extracted enclosure. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )

## Scenario 2: FRP manufacturing in an industrial setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES2)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.

The following scenarios contribute to the scenario *FRP manufacturing in an industrial setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.)*.

*This document has been prepared using REACH-Practical-Guide-on-Safe-Use-Information-for-Mixtures-under-REACH-The-LCID-Methodology, considering exposure scenario of relevant raw materials contained in the mixture.*

The corresponding release to the environment, exposure of workers resulting from these contributing scenarios is summarized below.

Table 2. Description of ES 2

<b>Free short title</b>	FRP manufacturing in an industrial setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES2)
<b>Systematic title based on use descriptor</b>	ERC 6D; PROC 3, 5, 7, 8A, 10, 13, 14, 15

<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 6d Production of resins
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	<p>PROC 3 - Use in closed batch process (synthesis or formulation)</p> <p>PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact)</p> <p>PROC 7 - Industrial spraying</p> <p>PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities</p> <p>PROC 10 - Roller application or brushing</p> <p>PROC 13 - Treatment of articles by dipping and pouring</p> <p>PROC 14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15 - Use of laboratory reagents in small scale laboratories</p>
<b>Contributing Scenario (1) controlling environmental exposure for ERC 6D</b>	
<b>Operational conditions</b> ( <i>referred to styrene</i> )	
Daily amount used at site	161000 kg/day ( <i>referred to styrene</i> )
Release times per year	300 days/year ( <i>justification: Continuous release</i> )
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.102 %
Release fraction to wastewater from process	0.00063 %
Release fraction to soil from process	0.025 %
Fraction tonnage to region	10 %
Fraction used at main source	60 %
STP	yes
River flow rate	18000 m <sup>3</sup> /day
Municipal sewage treatment plant discharge	2000000 L/day
<b>Other modified EUSES values</b>	

Fraction released to agricultural soil (Femis.agric)	0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))
Fraction released to industrial soil (Femis.ind)	0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))
Fraction released to waste water (Femis.water)	0.00063 % (justification: EU Risk Assessment Report, 2002)
Fraction released to air (Femis.air)	0.102 % (justification: EU Risk Assessment Report, 2002)
Fraction used at main source	60 % (justification: Value adopted to account for Worst case European manufacturing site )
Fraction of emission directed to water by local STP (Fstp.water)	0.081 - (justification: Efficiency STP 91.9%)

### Contributing Scenario (2) controlling industrial worker exposure for PROC 3

Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Material transfers; Automated process with (semi) closed systems; Use in contained batch processes. Resin injection and transfer processes, such as vacuum infusion, RTM, impregnation of sewer relining sleeves
<b>Qualitative Risk Assessment</b>	
General Put lids on containers immediately after	use. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures  Use suitable eye protection.  Use suitable chemically resistant gloves, tested to EN374.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)

Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors

Ventilation	good (30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Material transfers. Product delivery/storage - delivery of bulk and packaged products - outdoor / indoor
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	



Location	indoors
Ventilation	good (30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no

<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 5</b>	
<b>Name of contributing scenario</b>	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Drum/batch transfers; Pouring from small containers; Transfer from/pouring from containers; Mixing operations (open systems). Loading of mixing equipment; Preparation of material for application; (liquid products) - batch, indoor
<b>Qualitative Risk Assessment</b>	
General	Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium

<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )

### Contributing Scenario (5) controlling industrial worker exposure for PROC 5

<b>Name of contributing scenario</b>	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Casting operations; Mixing operations (open systems). Casting and mixing operations in (semi-) open containers. Examples are centrifugal casting, casting of polymer concrete and artificial marble and the manufacturing of SMC / BMC/ TMC, etc
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.

<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	5-60%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occur
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (6) controlling industrial worker exposure for PROC 5</b>	
<b>Name of contributing scenario</b>	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	General exposures (closed systems). Mixing liquid and solid components / into final formulated resin in blending vessel; Examples are gelcoat blending and compounding, formulation of repair putties, bonding pastes, chemical anchoring, etc
<b>Qualitative Risk Assessment</b>	
General	Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.

<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (7) controlling industrial worker exposure for PROC 7</b>	
<b>Name of contributing scenario</b>	7 - Industrial spraying
Scenario subtitle	Spraying; Spraying (automatic/robotic) All open mould applications where resins is applied by automated spraying or by robot in a spray cabin without direct worker involvement. Examples are spray lamination, gelcoat spraying and “chop-hoop” filament winding

<b>Qualitative Risk Assessment</b>	
General	<p>Ensure the ventilation system is regularly maintained and tested</p> <p>Dispose of empty containers and wastes safely</p> <p>Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures</p> <p>Wear suitable coveralls to prevent exposure to the skin Use suitable eye protection.</p> <p>Wear suitable face shield</p> <p>Wear chemically resistant gloves tested to EN374, in combination with intensive management supervision control.</p> <p>In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.</p>
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation: see details on sec.8 of SDS</b>	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Carry out in a vented booth or extracted enclosure	inhalation: 95 % ( <i>justification: Carry out in a vented booth or extracted enclosure</i> )
<b>Contributing Scenario (8) controlling industrial worker exposure for PROC 7</b>	
Name of contributing scenario	7 - Industrial spraying

Scenario subtitle	Spraying; Spraying (manually) All open mould applications where resins is applied by manual spraying in an open work environment. Examples are spray lamination, gelcoat spraying and “chop-hoop” filament winding
<b>Qualitative Risk Assessment</b>	

General	Carefully pour from containers Use long handled tools where possible Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Wear suitable face shield. Wear suitable coveralls to prevent exposure to the skin Wear chemically resistant gloves tested to EN374 in combination with intensive management supervision control. Wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes

<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Yes
Local exhaust ventilation	inhalation: 95 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (9) controlling industrial worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Equipment maintenance; Maintenance of small items. Equipment cleaning and maintenance
<b>Qualitative Risk Assessment</b>	

General	Drain or remove substance from equipment prior to break-in or maintenance. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>

<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (10) controlling industrial worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Disposal of wastes. Handling of non cured waste; Waste management / handling and storage of waste for removal for off-site treatment or for on-site treatment like incineration and/or biological waste water treatment
<b>Qualitative Risk Assessment</b>	
General	Put lids on containers immediately after use. Contain and dispose of waste according to local regulations Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %



Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	Indoors/outdoor
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (11) controlling industrial worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
Scenario subtitle	Rolling, Brushing; Roller, spreader, flow application All open mould applications where resins is applied by brushing, rolling and other low energy spreading operations; Examples are hand lamination, gelcoat brushing, filament winding
<b>Qualitative Risk Assessment</b>	

General	Use long handled brushes and rollers where possible Ensure the ventilation system is regularly maintained and tested Dispose of empty containers and wastes safely Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occur
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (12) controlling industrial worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
Scenario subtitle	Dipping, immersion and pouring; Rolling, Brushing; Roller, spreader, flow application Application of repair putties; Application of bonding pastes / adhesives.

<b>Qualitative Risk Assessment</b>
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General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. Wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	yes
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )

### Contributing Scenario (13) controlling industrial worker exposure for PROC 13

<b>Name of contributing scenario</b>	13 - Treatment of articles by dipping and pouring
Scenario subtitle	Dipping, immersion and pouring; Continuous process. Continuous processes with open impregnation steps, such as pultrusion with open impregnation baths and (semi-) continuous production of flat laminates
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes

<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (14) controlling industrial worker exposure for PROC 14</b>	
<b>Name of contributing scenario</b>	14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation
Scenario subtitle	Material transfers; Production or preparation or articles by tableting, compression, extrusion or pelletisation; Treatment by heating; Batch processes at elevated temperatures. Processes where curing of UP / VE resins takes place at high temperature. Examples are pultrusion with injection dies and processing of SMC / BMC / TMC, etc
<b>Qualitative Risk Assessment</b>	

General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	

Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	inhalation: 70 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )
<b>Contributing Scenario (15) controlling industrial worker exposure for PROC 15</b>	
<b>Name of contributing scenario</b>	15 - Use of laboratory reagents in small scale laboratories
Scenario subtitle	Laboratory activities. Quality control work of samples from blending vessel; R&D work including handling of samples from 1 kg to 1 drum
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	No
Local exhaust ventilation	inhalation: 90 % ( <i>justification: Use local exhaust ventilation with adequate effectiveness</i> )

### Scenario 3: FRP manufacturing in a professional setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES3)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.

The following scenarios contribute to the scenario *FRP manufacturing in a professional setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.)*.

*This document has been prepared using REACH-Practical-Guide-on-Safe-Use-Information-for-Mixtures-under-REACH-The-LCID-Methodology, considering exposure scenario of relevant raw materials contained in the mixture.*

The corresponding release to the environment, exposure of workers resulting from these contributing scenarios is summarized below.

Table 2. Description of ES 3

<b>Free short title</b>	FRP manufacturing in a professional setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES8)
<b>Systematic title based on use descriptor</b>	ERC 6C; PROC 3, 4, 5, 8A, 10, 11
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 6c Production of plastics
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	<p>PROC 3 - Use in closed batch process (synthesis or formulation)</p> <p>PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact)</p> <p>PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities</p> <p>PROC 10 - Roller application or brushing</p> <p>PROC 11 - Non industrial spraying</p>
<b>Contributing Scenario (1) controlling environmental exposure for ERC 6C</b>	
<b>Operational conditions</b> ( <i>referred to styrene</i> )	



Daily amount used at site	48300 kg/day ( <i>referred to styrene</i> )
Release times per year	300 days/year ( <i>justification: Continuous release</i> )
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.102 %
Release fraction to wastewater from process	0.000012 %

Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	60 %
STP	Yes
River flow rate	18000 m <sup>3</sup> /day
Municipal sewage treatment plant discharge	2000000 L/day

**Other modified EUSES values**

Fraction released to agricultural soil (Femis.agric)	0 % ( <i>justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002)</i> )
Fraction released to industrial soil (Femis.ind)	0 % ( <i>justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002)</i> )
Fraction released to waste water (Femis.water)	0.000012 % ( <i>justification: EU Risk Assessment Report, 2002</i> )
Fraction released to air (Femis.air)	0.102 % ( <i>justification: EU Risk Assessment Report, 2002</i> )
Fraction used at main source	60 % ( <i>justification: Value adopted to account for worst-case European manufacturing site</i> )
Fraction of emission directed to water by local STP (Fstp.water)	0.081 - ( <i>justification: Efficiency STP 91.9%</i> )

**Contributing Scenario (2) controlling professional worker exposure for PROC 3**

<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
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Scenario subtitle	Use in contained batch processes. Application of chemical anchoring
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	outdoors (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	No
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur

### Contributing Scenario (3) controlling professional worker exposure for PROC 4

Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Scenario subtitle	Use in contained batch processes. Sewer relining operation
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	outdoors (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	No
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs

### Contributing Scenario (4) controlling professional worker exposure for PROC 5

Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Material transfers; Pouring from small containers. Preparation of material for application (liquids) - transfer of material from one container to another; Formulating / blending resins, gelcoats, bonding pastes, putties etc. in blending vessels
<b>Qualitative Risk Assessment</b>	
General	Use drum pumps. Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness

### Contributing Scenario (5) controlling professional worker exposure for PROC 8A

<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Equipment maintenance; Maintenance of small items. Equipment cleaning and maintenance
<b>Qualitative Risk Assessment</b>	
General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	15 mins to 1 hour
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional

<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	Yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure might occur
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (6) controlling professional worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Disposal of wastes. Handling of non cured waste; Waste management / handling and storage of waste for removal for off-site treatment or for on-site treatment like incineration and/or biological waste water treatment
<b>Qualitative Risk Assessment</b>	

General	Dispose of empty containers and wastes safely Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	15 mins to 1 hour
Frequency of use	5 days / week

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (7) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
Scenario subtitle	Rolling, Brushing; Roller, spreader, flow application All open mould applications where resins is applied by brushing, rolling and other low energy spreading operations; Examples are hand lamination, gelcoat brushing, semicontinuous production of flat panels and laminates
<b>Qualitative Risk Assessment</b>	
General	Use long handled brushes and rollers where possible Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. In case of potential exposure wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	

Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	Use respiratory protection when exposure occurs
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (8) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
Scenario subtitle	Dipping, immersion and pouring; Rolling, Brushing; Roller, spreader, flow application Application of repair putties; Application of bonding pastes / adhesives.
<b>Qualitative Risk Assessment</b>	



General	Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves, tested to EN374. Wear suitable coveralls to prevent exposure to the skin. Wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100%
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	yes
<b>Contributing Scenario (9) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
Scenario subtitle	Dipping, immersion and pouring; Rolling, Brushing; Roller, spreader, flow application Application of floorings, mastics, coatings, castings
<b>Qualitative Risk Assessment</b>	

General Ensure good work practices are	<p>implemented</p> <p>Provide basic employee training to prevent/minimize exposures</p> <p>Use suitable eye protection.</p> <p>Use suitable chemically resistant gloves, tested to EN374.</p> <p>Wear suitable coveralls to prevent exposure to the skin.</p> <p>Wear a suitable respiratory protection with adequate effectiveness.</p>
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	yes
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness
<b>Contributing Scenario (10) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying

Scenario subtitle	Spraying; Spraying (manually) All open mould applications where resins is applied by manual spraying in an open work environment. Examples are spray lamination, gelcoat spraying and “chop-hoop” filament winding
<b>Qualitative Risk Assessment</b>	
General	Keep people not involved in the activity, away from the operation Ensure good work practices are implemented Provide basic employee training to prevent/minimize exposures Use suitable eye protection. Wear suitable face shield Wear suitable coveralls to prevent exposure to the skin. Wear chemically resistant gloves, tested to EN374, in combination with intensive management supervision control. Wear a suitable respiratory protection with adequate effectiveness.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Ventilation	good (30%)
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see details on sec.8 of SDS	

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Protective gloves	Gloves APF 5 80 %
Respiratory protection	yes
Local exhaust ventilation	Use local exhaust ventilation with adequate effectiveness