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Conforms to EU Regulation 1907/2006/EC as amended. - SDSGHS\_GB

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

1.1 Product identifier

Trade name : Aropol™ M 105 TAXR

RESIN

™ Trademark, INEOS or its subsidiaries, registered in

various countries

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

Recommended use : Reserved for industrial and professional use.

Restrictions on use

Consumer use

1.3 Details of the supplier of the safety data	1.4 Emergency telephone number
sheet	001-800-424-9300/001-703-527-3887, or contact
INEOS Composites Hispania S.L.	your local emergency telephone number at 111 -
Carretera Reial 137-139	ENG, SCO, CYM and 0808 808 8000 - NIE (Mo -
08960 Sant Just Desvern - Barcelona	Fr, 08.00 - 18.00)
Spain	· ·
+34 93 206 51 20 (in Spain)	
	Regulatory Information Number +34 93 206 51 20 (in Spain), or contact your local CSR contact person
sds.composites@ineos.com	·
	Product Information
	+34 93 206 51 20 (in Spain)

## **SECTION 2: Hazards identification**

## 2.1 Classification of the substance or mixture

## Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 3 H226: Flammable liquid and vapour.

Skin irritation, Category 2 H315: Causes skin irritation.

Eye irritation, Category 2 H319: Causes serious eye irritation.

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Reproductive toxicity, Category 2 H361d: Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure, Category 3, Respiratory system

H335: May cause respiratory irritation.

Specific target organ toxicity - repeated exposure, Category 1, Auditory organs

H372: Causes damage to organs through prolonged or repeated exposure.

Long-term (chronic) aquatic hazard, Category 3

H412: Harmful to aquatic life with long lasting effects.

#### 2.2 Label elements

## Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :







Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation. H335 May cause respiratory irritation.

H361d Suspected of damaging the unborn child. H372 Causes damage to organs (Auditory

organs) through prolonged or repeated

exposure.

H412 Harmful to aquatic life with long lasting

effects.

Precautionary statements : Prevention:

P201 Obtain special instructions before use.

P210 Keep away from heat, hot surfaces, sparks,

open flames and other ignition sources. No

smokina.

P260 Do not breathe dust/ fume/ gas/ mist/

vapours/ spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/

eye protection/ face protection.

Response:

P370 + P378 In case of fire: Use dry sand, dry chemical

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or alcohol-resistant foam to extinguish.

Hazardous components which must be listed on the label:

Styrene

## **Additional Labelling:**

EUH208 Contains cobalt bis(2-ethylhexanoate). May produce an allergic reaction.

#### 2.3 Other hazards

## **Additional advice**

No information available.

## **SECTION 3: Composition/information on ingredients**

#### 3.2 Mixtures

Chemical nature : Static Accumulator

## **Hazardous components**

Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
Styrene	100-42-5 202-851-5 01-2119457861-32-xxxx	Flam. Liq.3; H226 Acute Tox.4; H332 Skin Irrit.2; H315 Eye Irrit.2; H319 Repr.2; H361d STOT SE3; H335 STOT RE1; H372 Asp. Tox.1; H304 Aquatic Chronic3; H412	>= 40,00 - < 50,00
2-phenylpropene	98-83-9 202-705-0 01-2119472426-35-XXXX	Flam. Liq.3; H226 Eye Irrit.2; H319 Repr.2; H361 STOT SE3; H335 Aquatic Chronic2; H411	>= 0,30 - < 0,50
cobalt bis(2- ethylhexanoate)	136-52-7 205-250-6 01-2119524678-29-XXXX	Eye Irrit.2; H319 Skin Sens.1A; H317 Repr.1B; H360Fd Aquatic Acute1; H400	>= 0,00 - < 0,10

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		Aquatic Chronic3; H412		
2-methylhydroquinone	95-71-6 202-443-7 05-2114477355-41-xxxx	Acute Tox.4; H302 Skin Irrit.2; H315 Eye Irrit.2; H319 Aquatic Acute1; H400 Aquatic Chronic1; H410	>= 0,00 - < 0,10	
Substances with a workp	place exposure limit:			
Amorphous colloidal silica	112945-52-5 231-545-4		>= 1,00 - < 2,50	

For explanation of abbreviations see section 16.

#### **SECTION 4: First aid measures**

#### 4.1 Description of first aid measures

General advice : Move out of dangerous area.

Call a POISON CENTRE or doctor/physician if exposed or

you feel unwell.

Show this safety data sheet to the doctor in attendance.

Do not leave the victim unattended.

If inhaled : Move to fresh air.

IF INHALED: Call a POISON CENTER/ doctor if you feel

unwell.

Keep patient warm and at rest.

If unconscious, place in recovery position and seek medical

advice.

In case of skin contact : Remove contaminated clothing. If irritation develops, get

medical attention.

If on skin, rinse well with water.

Wash contaminated clothing before re-use.

If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water.

Remove contact lenses. Protect unharmed eye.

If swallowed : Obtain medical attention.

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Do not give milk or alcoholic beverages.

Never give anything by mouth to an unconscious person.

If symptoms persist, call a physician.

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

Symptoms : Signs and symptoms of exposure to this material through

breathing, swallowing, and/or passage of the material through

the skin may include:

stomach or intestinal upset (nausea, vomiting, diarrhea)

irritation (nose, throat, airways)

confusion

Risks

Causes skin irritation.

Causes serious eye irritation. May cause respiratory irritation.

Suspected of damaging the unborn child.

Causes damage to organs through prolonged or repeated

exposure.

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

Treatment : No hazards which require special first aid measures.

## **SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment.

Water spray

Foam

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

: High volume water jet

#### 5.2 Special hazards arising from the substance or mixture

Specific hazards during

firefighting

: Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite

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explosively.

Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Do not allow run-off from fire fighting to enter drains or water

courses.

Hazardous combustion

products

: Hydrocarbons

carbon dioxide and carbon monoxide

5.3 Advice for firefighters

for firefighters

Special protective equipment : In the event of fire, wear self-contained breathing apparatus.

Specific extinguishing

methods

: Product is compatible with standard fire-fighting agents.

Further information : Do not use a solid water stream as it may scatter and spread

Fire residues and contaminated fire extinguishing water must

be disposed of in accordance with local regulations. Use a water spray to cool fully closed containers.

#### **SECTION 6: Accidental release measures**

## 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.

Remove all sources of ignition. Use personal protective equipment.

Ensure adequate ventilation.

Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Persons not wearing protective equipment should be excluded

from area of spill until clean-up has been completed.

Comply with all applicable federal, state, and local regulations. Suppress (knock down) gases/vapours/mists with a water

spray jet.

#### 6.2 Environmental precautions

**Environmental precautions** : Prevent product from entering drains.

Prevent further leakage or spillage if safe to do so.

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If the product contaminates rivers and lakes or drains inform respective authorities.

## 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, 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).

#### 6.4 Reference to other sections

For further information see Section 8 and Section 13 of the safety data sheet.

## **SECTION 7: Handling and storage**

#### 7.1 Precautions for safe handling

Advice on safe handling : Open drum carefully as content may be under pressure.

Avoid formation of aerosol.

Provide sufficient air exchange and/or exhaust in work rooms.

Do not breathe vapours/dust.

Do not smoke.

Container hazardous when empty.

Take precautionary measures against static discharges. Avoid exposure - obtain special instructions before use.

Avoid contact with skin and eyes.

Smoking, eating and drinking should be prohibited in the

application area.

For personal protection see section 8.

Dispose of rinse water in accordance with local and national

regulations.

Advice on protection against

fire and explosion

: Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). No sparking tools should be used. Keep away from open flames, hot surfaces and sources of ignition. Use only explosion-proof

equipment.

Hygiene measures : Wash hands before breaks and at the end of workday. When

using do not eat or drink. When using do not smoke.

## 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage : Keep container tightly closed in a dry and well-ventilated

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areas and containers place. Containers which are opened must be carefully

resealed and kept upright to prevent leakage. Observe label precautions. No smoking. Electrical installations / working materials must comply with the technological safety

standards.

Other data : No decomposition if stored and applied as directed.

## 7.3 Specific end use(s)

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

#### 8.1 Control parameters

## **Occupational Exposure Limits**

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Styrene	100-42-5	TWA	100 ppm 430 mg/m3	GB EH40
		STEL	250 ppm 1.080 mg/m3	GB EH40
Amorphous colloidal silica	112945-52-5	TWA (inhalable dust)	6 mg/m3 inhalable dust (Silica)	GB EH40
		TWA (Respirable dust)	2,4 mg/m3 Respirable dust (Silica)	GB EH40
2-phenylpropene	98-83-9	STEL	100 ppm 492 mg/m3	2000/39/EC
		TWA	50 ppm 246 mg/m3	2000/39/EC
		TWA	50 ppm 246 mg/m3	GB EH40
		STEL	100 ppm 491 mg/m3	GB EH40
cobalt bis(2- ethylhexanoate)	136-52-7	TWA	0,1 mg/m3 (Cobalt)	GB EH40

## Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Styrene : End Use: Workers

Exposure routes: Inhalation

Potential health effects: Short-term exposure, Systemic effects

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Value: 289 mg/m3 End Use: Workers

Exposure routes: Inhalation

Potential health effects: Short-term exposure, Local effects

Value: 306 mg/m3 End Use: Workers

Exposure routes: Inhalation

Potential health effects: Long-term exposure, Systemic effects

Value: 85 mg/m3 End Use: Workers

Exposure routes: Skin contact

Potential health effects: Long-term exposure, Systemic effects

Value: 406 mg/kg End Use: Consumers Exposure routes: Inhalation

Potential health effects: Short-term exposure, Systemic effects

Value: 174,25 mg/m3 End Use: Consumers Exposure routes: Inhalation

Potential health effects: Short-term exposure, Local effects

Value: 182,75 mg/m3 End Use: Consumers

Exposure routes: Skin contact

Potential health effects: Long-term exposure, Systemic effects

Value: 343 mg/kg End Use: Consumers Exposure routes: Ingestion

Potential health effects: Long-term exposure, Systemic effects

Value: 2,1 mg/kg End Use: Consumers Exposure routes: Inhalation

Potential health effects: Long-term exposure, Systemic effects

Value: 10,2 mg/m3

#### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Styrene : Fresh water

Value: 0,028 mg/l Fresh water

Value: 0,04 mg/IIntermittent use/release

Marine water Value: 0,014 mg/l Sewage treatment plant

Value: 5 mg/l Fresh water sediment

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Value: 0,614 mg/kg Marine sediment Value: 0,307 mg/kg

Soil

Value: 0,2 mg/kg

#### 8.2 Exposure controls

#### **Engineering measures**

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

#### Personal protective equipment

Eye protection : Wear chemical splash goggles and face shield when there is

potential for exposure of the eyes or face to liquid, vapor or

mist.

Use eye protection according to EN 166.

Hand protection

Material : Laminate (Barrier© or Silvershield©)

Break through time : 480 min Glove thickness : > 0,5 mm

Remarks : The exact break through time can be obtained from the

protective glove producer and this has to be observed. Gloves should be discarded and replaced if there is any indication of

degradation or chemical breakthrough. The selected protective gloves have to satisfy the specifications of

Regulation (EU) 2016/425 and the standard EN 374 derived

from it.

Skin and body protection : Wear chemical resistant clothing such as a permeation-

resistant or chemical apron, gloves and boots whenever skin

contact is possible.

Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable

suits) to avoid exposed skin surfaces.

Protective clothing complying with EN 13688. Safety shoes complying with EN ISO 20345.

Respiratory protection : In the case of vapour formation use a respirator with an

approved filter.

Respiratory protection complying with EN 136. Respiratory protection complying with EN 140. Respiratory protection complying with EN 14387.

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Filter type : Organic vapour type (A)

## **SECTION 9: Physical and chemical properties**

## 9.1 Information on basic physical and chemical properties

Appearance : liquid

Odour : pungent

pH :

Not applicable

Melting point/freezing point : < -31 °C

Boiling point/boiling range : ca. 145 °C

Flash point : ca. 29 °C

Method: ASTM D 56

Flammability (solid, gas) : May form combustible dust concentrations in air (during

processing).

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : 8,5 hPa

Calculated Vapor Pressure

Density : 1,15 g/cm3

Solubility(ies)

Water solubility : insoluble

Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : 500 mPa.s

Viscosity, kinematic :  $> 20,5 \text{ mm2/s} (40 ^{\circ}\text{C})$ 

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#### 9.2 Other information

No data available

## **SECTION 10: Stability and reactivity**

## 10.1 Reactivity

No decomposition if stored and applied as directed.

## 10.2 Chemical stability

Stable under recommended storage conditions.

## 10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation may occur.

Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Exposure to air.

Exposure to sunlight.

Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Acids

aluminum

aluminum chloride

Bases Copper Copper alloys halogens iron chloride metal salts

Strong oxidizing agents

Peroxides

10.6 Hazardous decomposition products

Hazardous decomposition : carbon dioxide and carbon monoxide

products Hydrocarbons

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## **SECTION 11: Toxicological information**

## 11.1 Information on toxicological effects

Information on likely routes of : Inhalation

exposure

Skin contact Eye Contact Ingestion

### **Acute toxicity**

Not classified based on available information.

**Components:** 

Styrene

Acute oral toxicity : LD50 Oral (Rat): > 2.000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 11,8 mg/l, 2770 ppm

Exposure time: 4 h
Test atmosphere: vapour

No observed adverse effect level (Humans): 100 ppm

Exposure time: 7 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg

Method: OECD Test Guideline 402

Assessment: No adverse effect has been observed in acute

dermal toxicity tests.

**Components:** 

2-phenylpropene

Acute oral toxicity : LD50 (Rat): 4.900 mg/kg

Acute inhalation toxicity : LC50 (Rat): ca. 22,85 mg/l

Exposure time: 6 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): 14,6 g/kg

**Components:** 

cobalt bis(2-ethylhexanoate)

Acute oral toxicity : LD50 (Rat, female): ca. 3.129 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 10 mg/l

Exposure time: 1 h

Test atmosphere: dust/mist

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Assessment: Not classified as acutely toxic by inhalation

under GHS.

Acute dermal toxicity : LD50 (Rabbit): > 5.000 mg/kg

**Components:** 

2-methylhydroquinone

Acute oral toxicity : LD50 (Mouse): > 400 mg/kg

LD50 (Rat): 754 mg/kg

Acute dermal toxicity : LD50 (Guinea pig): > 1.000 mg/kg

Assessment: Not classified as acutely toxic by dermal

absorption under GHS.

**Components:** 

Amorphous colloidal silica

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg

Assessment: Not classified as acutely toxic by dermal

absorption under GHS.

#### Skin corrosion/irritation

Causes skin irritation.

**Product:** 

Result: Repeated exposure may cause skin dryness or cracking.

## **Components:**

Styrene

Species: Rabbit

Result: Irritating to skin.

Species: human skin Result: No skin irritation

2-phenylpropene Species: Rabbit

Result: Slight, transient irritation

cobalt bis(2-ethylhexanoate) Result: No skin irritation

2-methylhydroquinone Result: Irritating to skin.

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Amorphous colloidal silica Result: No skin irritation

## Serious eye damage/eye irritation

Causes serious eye irritation.

#### **Components:**

Styrene

Result: Irritating to eyes.

Remarks: Vapour during processing may be irritating to the respiratory tract and to the eyes.

2-phenylpropene Species: Rabbit

Result: Irritating to eyes.

cobalt bis(2-ethylhexanoate)

Species: Rabbit

Method: OECD Test Guideline 405

Result: Irritating to eyes.

2-methylhydroquinone Result: Irritating to eyes.

Amorphous colloidal silica Result: No eye irritation

#### Respiratory or skin sensitisation

Skin sensitisation: Not classified based on available information. Respiratory sensitisation: Not classified based on available information.

#### **Components:**

Styrene

Exposure routes: Skin contact

Species: Guinea pig

Assessment: Does not cause skin sensitisation.

Exposure routes: inhalation (vapour)

Species: Humans

Assessment: Does not cause respiratory sensitisation.

cobalt bis(2-ethylhexanoate)
Test Type: Local lymph node assay

Species: Mouse

Assessment: The product is a skin sensitiser, sub-category 1A.

Method: OECD Test Guideline 429

Remarks: Information given is based on data obtained from similar substances.

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2-methylhydroquinone Exposure routes: Dermal Species: Guinea pig

Assessment: Does not cause skin sensitisation.

#### Germ cell mutagenicity

Not classified based on available information.

**Components:** 

2-phenylpropene

Genotoxicity in vitro : Test Type: Ames test

Test species: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

cobalt bis(2-ethylhexanoate)

Genotoxicity in vitro : Test Type: Ames test

Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test

Result: negative

## Carcinogenicity

Not classified based on available information.

## Reproductive toxicity

Suspected of damaging the unborn child.

#### Components:

Assessment

Styrene

Reproductive toxicity -

: Some evidence of adverse effects on development, based on

animal experiments.

2-phenylpropene

Reproductive toxicity -

Assessment

: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

cobalt bis(2-ethylhexanoate)

Reproductive toxicity -

Assessment

: Clear evidence of adverse effects on sexual function and

fertility, based on animal experiments., Some evidence of adverse effects on development, based on animal

experiments.

## STOT - single exposure

May cause respiratory irritation.

**Components:** 

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Styrene

Assessment: May cause respiratory irritation.

2-phenylpropene

Exposure routes: Inhalation
Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

#### STOT - repeated exposure

Causes damage to organs (Auditory organs) through prolonged or repeated exposure.

## **Components:**

Styrene

Exposure routes: inhalation (vapour) Target Organs: Auditory system

Assessment: Causes damage to organs through prolonged or repeated exposure.

#### Repeated dose toxicity

## **Components:**

Styrene

Species: Human 85 mg/m3

Application Route: inhalation (vapour)

Species: Human 615 mg/kg

Application Route: Skin contact

#### **Aspiration toxicity**

Not classified based on available information.

## **Components:**

Styrene

May be fatal if swallowed and enters airways.

## **SECTION 12: Ecological information**

#### 12.1 Toxicity

#### **Components:**

Styrene

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 4,02 mg/l

Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 4,7 mg/l

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aquatic invertebrates Exposure time: 48 h

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 4,9

mg/l

Exposure time: 72 h

EC10 (Pseudokirchneriella subcapitata (green algae)): 0,28

mg/l

Exposure time: 96 h

Toxicity to bacteria : EC50 (activated sludge): ca. 500 mg/l

Exposure time: 0,5 h

Toxicity to daphnia and other

aquatic invertebrates

(Chronic toxicity)

: NOEC: 1,01 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Toxicity to soil dwelling

organisms

: NOEC: 34 mg/kg

Exposure time: 14 d

Species: Eisenia fetida (earthworms) Method: OECD Test Guideline 207

2-phenylpropene

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 2,97 mg/l

Exposure time: 96 h Test Type: static test

Method: OECD Test Guideline 203

Toxicity to daphnia and other

aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 1,645 mg/l

Exposure time: 48 h Test Type: static test

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 11,441

mg/l

End point: Growth inhibition Exposure time: 72 h Test Type: static test

Method: OECD Test Guideline 201

Toxicity to daphnia and other

aquatic invertebrates (Chronic toxicity)

: NOEC: 0,401 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Test Type: semi-static test

Method: OECD Test Guideline 211

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cobalt bis(2-ethylhexanoate)
M-Factor (Short-term (acute)

aquatic hazard)

**Ecotoxicology Assessment** 

Short-term (acute) aquatic

hazard

: Acute aquatic toxicity Category 1

Long-term (chronic) aquatic

hazard

: Chronic aquatic toxicity Category 3

2-methylhydroquinone

Toxicity to fish

: LC50 (Pimephales promelas (fathead minnow)): 0,09 mg/l

Exposure time: 96 h

Toxicity to daphnia and other

aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 0,19 mg/l

Exposure time: 48 h

M-Factor (Short-term (acute)

aquatic hazard)

: 10

Amorphous colloidal silica

Toxicity to fish

: LC50 (Brachydanio rerio (zebrafish)): > 10.000 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

#### 12.2 Persistence and degradability

## **Components:**

Styrene

Biodegradability : Result: Readily biodegradable.

Biodegradation: > 60 % Exposure time: 10 d

2-phenylpropene

Biodegradability : Test Type: aerobic

Inoculum: activated sludge Result: Not readily biodegradable.

Biodegradation: 21 % Exposure time: 28 d

Method: OECD Test Guideline 301F

cobalt bis(2-ethylhexanoate)

Biodegradability : Result: Readily biodegradable.

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Biodegradation: 60 % Exposure time: 10 d

Method: OECD Test Guideline 301B

2-methylhydroquinone

Biochemical Oxygen : 940 mg/g

Demand (BOD) Incubation time: 5 d

Chemical Oxygen Demand

(COD)

: 1.970 mg/g

BOD/COD : BOD/COD: 0,48 %

Amorphous colloidal silica

Biodegradability

: Result: The methods for determining biodegradability are not

applicable to inorganic substances.

## 12.3 Bioaccumulative potential

## **Components:**

Styrene

Bioaccumulation : Bioconcentration factor (BCF): < 100

Partition coefficient: n-

octanol/water

: log Pow: 2,96 (25 °C)

2-phenylpropene

Partition coefficient: n-

octanol/water

: log Pow: 3,48

2-methylhydroquinone

Partition coefficient: n-

octanol/water

: log Pow: 1,58

## 12.4 Mobility in soil

#### **Components:**

Styrene

Distribution among : Koc: 352

environmental compartments

#### 12.5 Results of PBT and vPvB assessment

#### **Components:**

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Styrene

Assessment : This substance is not considered to be persistent,

bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating

(vPvB)..

#### 12.6 Other adverse effects

No data available

## **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods

Product : Dispose of in accordance with the European Directives on

waste and hazardous waste.

Do not contaminate ponds, waterways or ditches with

chemical or used container.
Container hazardous when empty.

Dispose of in accordance with local regulations.

Contaminated packaging : Empty remaining contents.

Dispose of as unused product.

Empty containers should be taken to an approved waste

handling site for recycling or disposal. Do not re-use empty containers.

Do not burn, or use a cutting torch on, the empty drum.

#### **SECTION 14: Transport information**

## **SECTION 14: Transport information**

#### 14.1 UN number

**ADR: UN1866** 

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: UN1866
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: UN1866

**INTERNATIONAL MARITIME DANGEROUS GOODS: UN1866** 

**RID: UN1866** 

## 14.2 UN proper shipping name

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**ADR: RESIN SOLUTION** 

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: RESIN SOLUTION INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Resin solution

INTERNATIONAL MARITIME DANGEROUS GOODS: Resin solution

**RID: RESIN SOLUTION** 

#### 14.3 Transport hazard class(es)

ADR: 3

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: 3 INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: 3

**INTERNATIONAL MARITIME DANGEROUS GOODS:** 3

**RID:** 3

#### 14.4 Packing group

ADR: III

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: ||| INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: |||

INTERNATIONAL MARITIME DANGEROUS GOODS: |||

RID: III

#### 14.5 Environmental hazards

ADR: Not applicable

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not applicable INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not applicable

INTERNATIONAL MARITIME DANGEROUS GOODS: Not applicable

**RID:** Not applicable

#### 14.6 Special precautions for user

Not applicable

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

Ship Type: Not applicable Hazard code(s): Not applicable Pollutant Category: Not applicable

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

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## **SECTION 15: Regulatory information**

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

REACH - Candidate List of Substances of Very High

Concern for Authorisation (Article 59).

: Not applicable

REACH - List of substances subject to authorisation

(Annex XIV)

: Not applicable

Regulation (EC) No 1005/2009 on substances that

deplete the ozone layer

: Not applicable

Regulation (EC) No 850/2004 on persistent organic

pollutants

: Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of

major-accident hazards involving dangerous substances.

Quantity 1

Quantity 2

P5c FLAMMABLE LIQUIDS

5.000 t 50.000 t

#### The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL All components of this product are on the Canadian DSL

AICS On the inventory, or in compliance with the inventory

NZIoC Not in compliance with the inventory

ENCS On the inventory, or in compliance with the inventory

KECI On the inventory, or in compliance with the inventory

PICCS Not in compliance with the inventory

IECSC On the inventory, or in compliance with the inventory

#### **Inventories**

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AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

## 15.2 Chemical safety assessment

## **SECTION 16: Other information**

**Further information**Revision Date: 13.02.2020

## Classification procedure:

H226	Flammable liquid and vapour.	On basis of test data
H315	Causes skin irritation.	Calculation method
H319	Causes serious eye irritation.	Calculation method
H361d	Suspected of damaging the unborn child.	Calculation method
H335	May cause respiratory irritation.	Calculation method
H372	Causes damage to organs through prolonged or repeated exposure.	Calculation method
H412	Harmful to aquatic life with long lasting effects.	Calculation method

## **Full text of H-Statements**

. un toxt of the ott	
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H361	Suspected of damaging fertility or the unborn child.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure if
	inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

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H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

Other information : The information accumulated herein is believed to be accurate

but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by INEOS's Environmental Health and Safety Department (+34)

93 206 51 20 (in Spain)).

Sources of key data used to compile the Safety Data Sheet INEOS internal data including own and sponsored test reports

The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet:

ACGIH: American Conference of Industrial Hygienists

BEI : Biological Exposure Index

CAS: Chemical Abstracts Service (Division of the American Chemical Society).

CMR: Carcinogenic, Mutagenic or Toxic for Reproduction

FG: Food grade

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

H-statement: Hazard Statement

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO: International Civil Aviation Organization

ICAO-TI (ICAO): Technical Instructions by the "International Civil Aviation Organization"

IMDG: International Maritime Code for Dangerous Goods

ISO: International Organization for Standardization

logPow: octanol-water partition coefficient

LCxx: Lethal Concentration, for xx percent of test population

LDxx: Lethal Dose, for xx percent of test population. ICxx: Inhibitory Concentration for xx of a substance

Ecxx : Effective Concentration of xx N.O.S.: Not Otherwise Specified

OECD: Organization for Economic Co-operation and Development

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OEL : Occupational Exposure Limit P-Statement : Precautionary Statement PBT : Persistent , Bioaccumulative and Toxic

PPE: Personal Protective Equipment STEL: Short-term exposure limit STOT: Specific Target Organ Toxicity

TLV: Threshold Limit Value TWA: Time-weighted average

vPvB: Very Persistent and Very Bioaccumulative

WEL: Workplace Exposure Level

GAM: Water Hazard Class for the Netherlands

ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.

ADNR: Regulation for the Carriage of Dangerous Substances on the Rhine

CLP: Classification, Labelling and Packaging

CSA: Chemical Safety Assessment CSR: Chemical Safety Report DNEL: Derived No Effect Level.

EINECS: European Inventory of Existing Commercial Chemical Substances.

**ELINCS**: European List of Notified Chemical Substances

GV: Exposure limits (DK)

PEC: Predicted Effect Concentration
PEL: Permissible Exposure Limits
PNEC: Predicted No Effect Concentration

PNEC: Predicted No Effect Concentration

REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail

WGK: German Water Hazard Class

GB / EN

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# INEOS

## **SAFETY DATA SHEET (1907/2006)**

Revision Date: 2019-12-16

Version: 1

PRODUCTS THAT CONTAIN STYENE

# Scenario 7: FRP manufacturing in an industrial setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES7)

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.).

Table 7. Description of ES 7

Table 1. Description of Lo 1	
Free short title	FRP manufacturing in an industrial setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES7)
Systematic title based on use descriptor	ERC 6D; PROC 10, 7, 13, 5, 3, 14, 8A, 15
Name of contributing environmental scenario and corresponding ERC	ERC 6d Production of resins/rubbers
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 10 - Roller application or brushing PROC 7 - Industrial spraying PROC 13 - Treatment of articles by dipping and pouring PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 3 - Use in closed batch process (synthesis or formulation) PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 15 - Use of laboratory reagents in small scale laboratories
7.1 Contributing Scenario (1) controlling	environmental exposure for ERC 6D
Operational conditions	
Annual European tonnage	8.06E5 to/year
Daily amount used at site	7.61E5 kg/day
Release times per year	300 days/year (justification: Continous release)

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100  0.102 %  0.00063 %  0.025 %  10 %  60 %  yes  18000 m³/day  2000000 L/day   0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))
0.102 %  0.00063 %  0.025 %  10 %  60 %  yes  18000 m³/day  2000000 L/day   0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))
0.00063 %  0.025 %  10 %  60 %  yes  18000 m³/day  2000000 L/day   0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities, 2002))
0.025 %  10 %  60 %  yes  18000 m³/day  2000000 L/day  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, Assessment Report on Styrene,European Communities,
10 % 60 %  yes  18000 m³/day  2000000 L/day  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, Assessment Report on Styrene,European Communities,
960 %  yes  18000 m³/day  2000000 L/day  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, Assessment Report on Styrene,European Communities,
yes  18000 m³/day  2000000 L/day  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene,European Communities,
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Assessment Report on Styrene, European Communities, 2002))  0 % (justification: No direct release to soil (EU Risk Assessment Report on Styrene, European Communities,
Assessment Report on Styrene, European Communities,
0.00063 % (justification: EU Risk Assessment Report, 2002)
0.102 % (justification: EU Risk Assessment Report, 2002)
60 % (justification: Value adopted to account for Worstcase European manufacturing site )
0.081 - (justification: Efficiency STP 97.9%)
industrial worker exposure for PROC 10
10 - Roller application or brushing
Rolling, Brushing [CS51]; Roller, spreader, flow application [CS98] All open mould applications where resins is applied by brushing, rolling and other low energy spreading operations; Examples are handlamination, gelcoatbrushing, filament winding
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 employe training to prevent/minimize exposures Use suitable eye protection.  Use suitable chemically resistant gloves.
Wear suitable coveralls to prevent exposure to the skin
•

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Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	·
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk manager	ment
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affecting w	vorkers exposure
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
Technical conditions and measures to control	dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal	protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
7.3 Contributing Scenario (3) controlli	ng industrial worker exposure for PROC 7
Name of contributing scenario	7 - Industrial spraying
Scenario subtitle	Spraying [CS10]; Spraying (automatic/robotic) [CS97] 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
Qualitative Risk Assessment	
General	Ensure the ventilation system is regularly maintained and tested Dispose of empty containers and wastes safely Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Wear suitable coveralls to prevent exposure to the skin Use suitable eye protection.  Wear suitable face shield Wear chemically resistant gloves in combination with intensive management supervision control.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	

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Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk management		
Exposed skin surface	1,500 cm <sup>2</sup>	
Other given operational conditions affecting world	I · *	
Location	indoors	
Domain	industrial	
	I	
Technical conditions and measures to control dis Local exhaust ventilation	Ī	
Conditions and measures related to personal pro	no	
•	1	
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	no	
Carry out in a vented booth or extracted enclosure	inhalation: 95 % (justification: Carry out in a vented booth or extracted enclosure)	
7.4 Contributing Scenario (4) controlling	industrial worker exposure for PROC 7	
Name of contributing scenario	7 - Industrial spraying	
Scenario subtitle	Spraying [CS10]; Spraying (manually) [CS97] All open mould applications where resins is applied by manual spraying in an open work environement. Examples are spray lamination, gelcoat spraying and "chop-hoop" filament winding	
Qualitative Risk Assessment	, , , , , , , , , , , , , , , , , , , ,	
General	Carefully pour from containers Use long handled tools where possible Ensure good work practices are implemented Provide basic employe 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 in combination with intensive management supervision control.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk manageme	nt	
Exposed skin surface	1,500 cm <sup>2</sup>	

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Other given operational conditions affecting	a workers exposure
Location	indoors
Ventilation	good (30%)
Domain	industrial
Technical conditions and measures to cont	
Local exhaust ventilation	no
	nal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %
	olling industrial worker exposure for PROC 10
Name of contributing scenario	10 - Roller application or brushing
Scenario subtitle	Dipping, immersion and pouring [CS4]; Rolling, Brushing [CS51]; Roller, spreader, flow application [CS98] Application of repair putties; Application of bonding pastes / adhesives.
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	5-25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affecting	g workers exposure
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
Technical conditions and measures to cont	trol dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Conditions and measures related to person	ial protection, nyglene and nealth evaluation

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Respiratory protection	no
7.6 Contributing Scenario (6) contr	rolling industrial worker exposure for PROC 13
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Scenario subtitle	Dipping, immersion and pouring [CS4]; Continuous process [CS54]. Continuous processes with open impregnation steps, such as pultrusion with open impregnation baths and (semi-) continuous production of flat laminates
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	•
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk man	
Exposed skin surface	480 cm <sup>2</sup>
Other given operational conditions affection	ng workers exposure
Location	indoors
Domain	industrial
Technical conditions and measures to cor	ntrol dispersion and exposure
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to perso	nal protection, hygiene and health evaluation
Protective gloves	No
Respiratory protection	no
7.7 Contributing Scenario (7) contr	olling industrial worker exposure for PROC 5
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Casting operations [CS32]; Mixing operations (open systems) [CS30]. 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
Qualitative Risk Assessment	

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General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	5-25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk mai	nagement
Exposed skin surface	480 cm <sup>2</sup>
Other given operational conditions affect	ing workers exposure
Location	indoors
Domain	industrial
Technical conditions and measures to co	ntrol dispersion and exposure
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to person	onal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
7.8 Contributing Scenario (8) cont	rolling industrial worker exposure for PROC 5
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	General exposures (closed systems) [CS15]. 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
Qualitative Risk Assessment	
General	Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	•
Physical state	liquid
Concentration in substance	100 %

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Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk manager	ment	
Exposed skin surface	480 cm <sup>2</sup>	
Other given operational conditions affecting w	orkers exposure	
Location	indoors	
Ventilation	enhanced (70%)	
Domain	industrial	
Technical conditions and measures to control	dispersion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal	protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	no	
7.9 Contributing Scenario (9) controlli	ng industrial worker exposure for PROC 3	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)	
Scenario subtitle	Material transfers [CS3]; Automated process with (semi) closed systems [CS93]; Use in contained batch processes [CS37]. Resin injection and transfer processes, such as vacuüm infusion, RTM, impregnation of sewer relining sleeves	
Qualitative Risk Assessment	·	
General	Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk manager		
Exposed skin surface	240 cm <sup>2</sup>	
Other given operational conditions affecting w	rorkers exposure	

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Location	indoors	
Ventilation	good (30%)	
Domain	industrial	
Technical conditions and measures to control d	ispersion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to personal pr	otection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	no	
7.10 Contributing Scenario (10) control	ling industrial worker exposure for PROC 14	
Name of contributing scenario	14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation	
Scenario subtitle	Material transfers [CS3]; Production or preparation or articles by tabletting, compression, extrusion or pelletisation [CS100]; Treatment by heating [CS129]; Batch processes at elevated temperatures [CS136]. 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	
Qualitative Risk Assessment	<u>,                                     </u>	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves.	
Product characteristics	Coo datable diorindary recolarit groves.	
Physical state	liquid	
Concentration in substance	5-25%	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk managem	ent	
•	480 cm <sup>2</sup>	
Other given operational conditions affecting wo		
Location	indoors	
Ventilation	enhanced (70%)	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal protection, hygiene and health evaluation		
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	no	

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Name of contributing scenario	ontrolling industrial worker exposure for PROC 3  3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Material transfers [CS3]. Product delivery/storage - delivery of
	bulk and packaged products - outdoor / indoor
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves.
Product characteristics	Ose suitable chemically resistant gloves.
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk ma	-
Exposed skin surface	240 cm <sup>2</sup>
Other given operational conditions affec	ting workers exposure
Location	indoors
Ventilation	good (30%)
Domain	industrial
Technical conditions and measures to co	ontrol dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to pers	sonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
7.12 Contributing Scenario (12) c	ontrolling industrial worker exposure for PROC 5
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Scenario subtitle	Drum/batch transfers [CS8]; Pouring from small containers [CS9]; Transfer from/pouring from containers [CS22]; Mixing operations (open systems) [CS30]. Loading of mixing equipment; Preparation of material for application; (liquid products) - batch, indoor
Qualitative Risk Assessment	
General	Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection.

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	Use suitable chemically resistant gloves.
Duadriet above stavistics	Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	T
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk m	
Exposed skin surface	480 cm <sup>2</sup>
Other given operational conditions affe	cting workers exposure
Location	indoors
Domain	industrial
Technical conditions and measures to	control dispersion and exposure
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to per	sonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
7.13 Contributing Scenario (13)	controlling industrial worker exposure for PROC 8A
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Equipment maintenance [CS5]; Maintenance of small items
	[CS18]. Equipment cleaning and maintenance, open indoor
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk m	

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Expand akin aurfana	960 cm <sup>2</sup>		
Exposed skin surface			
Other given operational conditions affecting			
Location	indoors		
Domain	industrial		
Technical conditions and measures to contro	ol dispersion and exposure		
Local exhaust ventilation	no		
Conditions and measures related to persona	Conditions and measures related to personal protection, hygiene and health evaluation		
Protective gloves	Gloves APF 5 80 %		
Respiratory protection	no		
Local exhaust ventilation	inhalation: 70 % (justification: Use local exhaust ventilation with adequate effectiveness)		
7.14 Contributing Scenario (14) contr	rolling industrial worker exposure for PROC 15		
Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories		
Scenario subtitle	Laboratory activities [CS36]. Quality control work of samples from blending vessel; R&D work including handling of samples from 1 kg to 1 drum		
Qualitative Risk Assessment			
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves.		
Product characteristics	·		
Physical state	liquid		
Concentration in substance	100 %		
Fugacity / Dustiness	medium		
Frequency and duration of use			
Duration of activity	>4 hours (default)		
Frequency of use	5 days / week		
Human factors not influenced by risk manage			
Exposed skin surface	240 cm <sup>2</sup>		
Other given operational conditions affecting	workers exposure		
Location	indoors		
Domain	industrial		
Technical conditions and measures to control	ol dispersion and exposure		
Local exhaust ventilation	no		
Conditions and measures related to persona	l protection, hygiene and health evaluation		
Protective gloves	Gloves APF 5 80 %		
Respiratory protection	no		

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7.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 8A		
Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	
Scenario subtitle	Disposal of wastes [CS28]. 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	
Qualitative Risk Assessment		
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 employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk management		
Exposed skin surface	960 cm <sup>2</sup>	
Other given operational conditions affecting workers exposure		
Location	indoors	
Domain	industrial	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	yes (inhalation 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation		
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	no	

## Scenario 8: FRP manufacturing in a professional setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty etc.) (ES8)

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.).

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Table 8. Description of ES 8	
Free short title	FRP manufacturing in a professional setting, using UP/VE
	resins and/or formulated resins (gelcoat, bonding paste, putty
Systematic title based on use descriptor	etc.) (ES8)
Systematic title based on use descriptor	ERC 8E; PROC 10, 11, 5, 4, 3, 8A  ERC 8e Wide dispersive outdoor use of reactive substances in
and corresponding ERC	open systems
Name(s) of contributing worker scenarios and	PROC 10 - Roller application or brushing
corresponding PROCs	PROC 11 - Non industrial spraying
	PROC 5 - Mixing or blending in batch processes (multistage
	and/or significant contact)
	PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC 3 - Use in closed batch process (synthesis or
	formulation)
	PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
	containers at non dedicated facilities
8.1 Contributing Scenario (1) controlling	environmental exposure for ERC 8E
Operational conditions	
Annual European tonnage	8.42E6 to/year
Daily amount used at site	4.83E5 kg/day
Release times per year	300 days/year (justification: Continous production)
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 % (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)	0.000012 % (justification: EU Risk Assessment Report, 2002)

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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 97.9%)
8.2 Contributing Scenario (2) controlling	professional worker exposure for PROC 10
Name of contributing scenario	10 - Roller application or brushing
Scenario subtitle	Rolling, Brushing [CS51]; Roller, spreader, flow application [CS98] All open mould applications where resins is applied by brushing, rolling and other low energy spreading operations; Examples are handlamination, gelcoatbrushing, semicontinuous production of flat panels and laminates
Qualitative Risk Assessment	
General	Use long handled brushes and rollers where possible Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk manageme	nt
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affecting wor	kers exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dis	spersion and exposure
Local exhaust ventilation	no
Conditions and measures related to personal pro	tection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %
8.3 Contributing Scenario (3) controlling	professional worker exposure for PROC 11
	44. Non industrial agreeing
Name of contributing scenario	11 - Non industrial spraying

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	applications where resins is applied by manual spraying in an
	open work environement. Examples are spray lamination,
	gelcoat spraying and "chop-hoop" filament winding
Qualitative Risk Assessment	
General	Keep people not involved in the activity, away from the operation Ensure good work practices are implemented Provide basic employe 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 in combination with intensive
	management supervision control.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk m	•
Exposed skin surface	1,500 cm <sup>2</sup>
Other given operational conditions affect	cting workers exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to per	sonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	95 %

• • • • • • • • • • • • • • • • • • • •	trolling professional worker exposure for PROC 10
Name of contributing scenario	10 - Roller application or brushing
Scenario subtitle	Dipping, immersion and pouring [CS4]; Rolling, Brushing [CS51]; Roller, spreader, flow application [CS98] Application of repair putties; Application of bonding pastes / adhesives.

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General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.	
Product characteristics		
Physical state	liquid	
Concentration in substance	5-25%	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk management		
Exposed skin surface	960 cm <sup>2</sup>	
Other given operational conditions affecting workers exposure		
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to cor	ntrol dispersion and exposure	
Local exhaust ventilation	no	
Conditions and measures related to perso	nal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	90 %	
8.5 Contributing Scenario (5) contr	rolling professional worker exposure for PROC 10	
Name of contributing scenario	10 - Roller application or brushing	
Scenario subtitle	Dipping, immersion and pouring [CS4]; Rolling, Brushing [CS51]; Roller, spreader, flow application [CS98] Application of floorings, mastics, coatings, castings	

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Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	I
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk n	nanagement
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affe	ecting workers exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to	control dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to pe	rsonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %
8.6 Contributing Scenario (6) co	ntrolling professional worker exposure for PROC 5
Name of contributing scenario	5 - Mixing or blending in batch processes (multistage and/or significant contact)

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Scenario subtitle	Material transfers [CS3]; Pouring from small containers [CS9]. 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	
Qualitative Risk Assessment		
General	Use drum pumps. Put lids on containers immediately after use. Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.	
Product characteristics		
Physical state	liquid	
Concentration in substance	100 %	
Fugacity / Dustiness	medium	
Frequency and duration of use		
Duration of activity	>4 hours (default)	
Frequency of use	5 days / week	
Human factors not influenced by risk managemen	nt	
Exposed skin surface	480 cm <sup>2</sup>	
Other given operational conditions affecting work	ers exposure	
Location	indoors	
Ventilation	good (30%)	
Domain	professional	
Technical conditions and measures to control dispersion and exposure		
Local exhaust ventilation	no	
Conditions and measures related to personal prot	tection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %	
Respiratory protection	90 %	

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Name of contributing scenario	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Scenario subtitle	Use in contained batch processes [CS37]. Sewer relining operation
Qualitative Risk Assessment	<u>'</u>
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	<u>'</u>
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	<u>'</u>
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk m	anagement
Exposed skin surface	480 cm <sup>2</sup>
Other given operational conditions affe	cting workers exposure
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to	control dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to per	rsonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

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Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)
Scenario subtitle	Use in contained batch processes [CS37]. Application of chemical anchoring
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures In case of potential exposure: Use suitable eye protection. Use suitable chemically resistant gloves.
Product characteristics	,
Physical state	liquid
Concentration in substance	5-25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk	management
Exposed skin surface	240 cm <sup>2</sup>
Other given operational conditions af	fecting workers exposure
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to	o control dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to p	personal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

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Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Equipment maintenance [CS5]; Maintenance of small items [CS18]. Equipment cleaning and maintenance, open indoor
Qualitative Risk Assessment	
General	Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	,
Duration of activity	15 mins to 1 hour
Frequency of use	5 days / week
Human factors not influenced by risk m	anagement
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affect	cting workers exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to c	control dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to per	sonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

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Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Disposal of wastes [CS28]. 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
Qualitative Risk Assessment	
General	Dispose of empty containers and wastes safely Ensure good work practices are implemented Provide basic employe training to prevent/minimize exposures Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable coveralls to prevent exposure to the skin.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	15 mins to 1 hour
Frequency of use	5 days / week
Human factors not influenced by risk n	nanagement
Exposed skin surface	960 cm <sup>2</sup>
Other given operational conditions affe	ecting workers exposure
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to	control dispersion and exposure
Local exhaust ventilation	no
Conditions and measures related to pe	rsonal protection, hygiene and health evaluation
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

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