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

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

1.1 Product identifier

Trade name : AME 5000™ INF-90 LV

**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 sheet INEOS Composites Hispania S.L. Carretera Reial 137-139 08960 Sant Just Desvern - Barcelona Spain | 1.4 Emergency telephone number<br>001-800-424-9300/001-703-527-3887, or contact<br>your local emergency telephone number at + 34<br>91 562 04 20 |
|---|--|
| +34 93 206 51 20 (in Spain)   | Regulatory Information Number<br>+34 93 206 51 20 (in Spain), or contact your local<br>CSR contact person  |
| sds.composites@ineos.com  | Product Information<br>+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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Skin sensitisation, Category 1 H317: May cause an allergic skin reaction.

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, hearing 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.

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 (hearing 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 smoking. P260 Do not breathe mist or vapours.

P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye

protection/ face protection/ hearing protection.

Response:

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P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

# Hazardous components which must be listed on the label:

Styrene

- 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid
- 2-Phenylpropene

cobalt bis(2-ethylhexanoate)

#### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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

## 3.2 Mixtures

Components

| Chemical name | CAS-No.             | Classification       | Concentration |
|---------------|---------------------|----------------------|---------------|
|               | EC-No.              |                      | (% w/w)       |
|               | Index-No.           |                      |               |
|               | Registration number |                      |               |
| Styrene       | 100-42-5            | Flam. Liq. 3; H226   | >= 25 - < 40  |
|               | 202-851-5           | Acute Tox. 4; H332   |               |
|               | 601-026-00-0        | Skin Irrit. 2; H315  |               |
|               | 01-2119457861-32-   | Eye Irrit. 2; H319   |               |
|               | xxxx                | Repr. 2; H361d       |               |
|               |                     | STOT SE 3; H335      |               |
|               |                     | (Respiratory system) |               |
|               |                     | STOT RE 1; H372      |               |
|               |                     | (hearing organs)     |               |

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|  |   | Asp. Tox. 1; H304<br>Aquatic Chronic 3;<br>H412  |                     |
|--|---|--|---------------------|
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid | 36425-16-8<br>5000906   | Skin Sens. 1B; H317  | >= 5 - < 10         |
| 2-Phenylpropene  | 98-83-9<br>202-705-0<br>601-027-00-6<br>01-2119472426-35-<br>XXXX | Flam. Liq. 3; H226<br>Eye Irrit. 2; H319<br>Repr. 2; H361<br>STOT SE 3; H335<br>(Respiratory system)<br>Aquatic Chronic 2;<br>H411                   | >= 1 - < 2,5        |
|  |   | specific concentration<br>limit<br>STOT SE 3; H335<br>>= 25 %  |                     |
| methacrylic acid   | 79-41-4<br>201-204-4<br>607-088-00-5                              | Acute Tox. 4; H302<br>Acute Tox. 4; H332<br>Acute Tox. 3; H311<br>Skin Corr. 1A; H314<br>Eye Dam. 1; H318<br>STOT SE 3; H335<br>(Respiratory system) | >= 0,1 - < 0,5      |
|  |   | specific concentration limit STOT SE 3; H335 >= 1 %  |                     |
| cobalt bis(2-ethylhexanoate)   | 136-52-7<br>205-250-6<br>01-2119524678-29-<br>xxxx                | Eye Irrit. 2; H319 Skin Sens. 1A; H317 Repr. 1B; H360Fd Aquatic Acute 1; H400 Aquatic Chronic 3; H412 M-Factor (Acute                                | >= 0,025 - <<br>0,1 |
| Lludraguinana  | 100 24 0  | aquatic toxicity): 1   | 0.005               |
| Hydroquinone   | 123-31-9  | Acute Tox. 4; H302   | >= 0,025 - <        |

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| 204-617-8<br>604-005-00-4 | Eye Dam. 1; H318<br>Skin Sens. 1; H317<br>Muta. 2; H341<br>Carc. 2; H351<br>Aquatic Acute 1;<br>H400<br>Aquatic Chronic 1;<br>H410 | 0,1 |
|---------------------------|--|-----|
|                           | M-Factor (Acute aquatic toxicity): 10  |     |

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.

Do not give milk or alcoholic beverages.

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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.

May cause an allergic skin reaction. 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

: Carbon dioxide (CO2) Carbon monoxide Hydrocarbons

# 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 : 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.

If the product contaminates rivers and lakes or drains inform

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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.

Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being

used.

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.

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# 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage

areas and containers

: Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label

precautions. No smoking.

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

7.3 Specific end use(s)

Specific use(s) : No data available

# **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 | VLA-EC                        | 40 ppm<br>172 mg/m3  | ES VLA     |
|                  |          | VLA-ED                        | 20 ppm<br>86 mg/m3   | ES VLA     |
| 2-Phenylpropene  | 98-83-9  | STEL                          | 100 ppm<br>492 mg/m3 | 2000/39/EC |
|                  |          | TWA                           | 50 ppm<br>246 mg/m3  | 2000/39/EC |
|                  |          | VLA-ED                        | 50 ppm<br>246 mg/m3  | ES VLA     |
|                  |          | VLA-EC                        | 100 ppm<br>492 mg/m3 | ES VLA     |
| methacrylic acid | 79-41-4  | VLA-ED                        | 20 ppm<br>72 mg/m3   | ES VLA     |
| Hydroquinone     | 123-31-9 | VLA-ED                        | 2 mg/m3              | ES VLA     |

# **Biological occupational exposure limits**

| Substance name | CAS-No. | Control parameters                          | Sampling time  | Basis  |
|----------------|---------|---|----------------|--------|
| Styrene        |         | mandelic acid and phenylglyoxilic acid: 400 | End of workday | ES VLB |

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| mg/g Creatinine When the end of the exposure does not coincide with the end of the workday, the sample is taken as soon as possible after the actual exposure has stopped, The biological indicator is non-specific because it can be found after exposure to other chemical agents.(Urine)  |                |        |
|--|----------------|--------|
| styrene: 0,2 mg/l When the end of the exposure does not coincide with the end of the workday, the sample is taken as soon as possible after the actual exposure has stopped, The biological indicator is an indicator of exposure to the chemical agent in question, but that the quantitative interpretation of its measurement is ambiguous (semi- quantitative). These biological indicators should be used as a screening test when a quantitative test is not possible or used as a confirmatory test if the quantitative test is | End of workday | ES VLB |

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|              |          | not specific and the origin of the determinant is doubtful.(venous blood)   |                |        |
|--------------|----------|---|----------------|--------|
| HYDROQUINONE | 123-31-9 | methemoglobin: 1.5 % metahaemoglobine on total haemoglobine When the end of the exposure does not coincide with the end of the workday, the sample is taken as soon as possible after the actual exposure has stopped, Background. The biological indicator is normally present in detectable quantities in people who are not occupationally exposed. These background levels are taken into account in the VLB., The biological indicator is non- specific because it can be found after exposure to other chemical agents., The biological indicator of exposure to the chemical agent in question, but that the quantitative interpretation of its measurement is | End of workday | ES VLB |

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|  | ambiguous (semi- quantitative). These biological indicators should be used as a screening test when a quantitative test is not possible or used as a confirmatory test if the quantitative test is not specific and the origin of the determinant is doubtful.(Blood) |
|--|---|
|--|---|

# 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

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

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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 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 when there is the potential for

exposure of the eyes 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

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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 as appropriate:

Impervious clothing

Safety shoes

Flame-resistant clothing

Choose body protection according to the amount and concentration of the dangerous substance at the work place. Discard gloves that show tears, pinholes, or signs of wear.

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.

: Organic vapour type (A) Filter type

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

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

# 9.1 Information on basic physical and chemical properties

Physical state : liquid

Odour aromatic

Odour Threshold No data available

Melting point/freezing point No data available

Boiling point/boiling range No data available

Flammability No data available

Upper explosion limit / Upper : No data available

flammability limit

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Lower explosion limit / Lower : No data available

flammability limit

Flash point 29,4 °C

Method: ASTM D 56

Decomposition temperature No data available

рΗ No data available

Viscosity

: No data available Viscosity, dynamic

Viscosity, kinematic > 20,5 mm2/s (40 °C)

Solubility(ies)

Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: n-

octanol/water

No data available

Vapour pressure No data available

Relative density No data available

No data available Density

Relative vapour density No data available

9.2 Other information

Oxidizing properties No data available

Self-ignition No data available

: No data available Evaporation rate

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# **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

halogenated hydrocarbons

halogens iron chloride metal salts

Strong oxidizing agents

Peroxides

# 10.6 Hazardous decomposition products

Hazardous decomposition

: Hydrocarbons Acetone

products

Carbon dioxide (CO2) Carbon monoxide

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# **SECTION 11: Toxicological information**

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

Information on likely routes of : Inhalation

exposure Skin contact

Eye Contact Ingestion

#### **Acute toxicity**

Not classified based on available information.

**Product:** 

Acute inhalation toxicity : Acute toxicity estimate: > 20 mg/l

Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2.000 mg/kg

Method: Calculation method

**Components:** 

Styrene:

Acute oral toxicity : LD50 (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.

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

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

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Method: OECD Test Guideline 423

GLP: yes

Assessment: Not classified as acutely toxic by ingestion under

GHS.

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

methacrylic acid:

Acute oral toxicity : LD50 (Mouse): 1.250 mg/kg

LD50 (Rat, male): 1.320 mg/kg Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 7,1 mg/l

Exposure time: 4 h
Test atmosphere: vapour

Method: OECD Test Guideline 403

Assessment: The component/mixture is classified as acute inhalation toxicity, category 4., The component/mixture is

moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit): 500 - 1.000 mg/kg

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

Assessment: Not classified as acutely toxic by inhalation under GHS., No adverse effect has been observed in acute

inhalation toxicity tests.

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

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Hydroquinone:

Acute oral toxicity : LD50 (Rat, female): 367 mg/kg

Method: OECD Test Guideline 401

GLP: yes

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

Method: OECD Test Guideline 402

GLP: yes

Assessment: No adverse effect has been observed in acute

dermal toxicity tests.

#### Skin corrosion/irritation

Causes skin irritation.

**Product:** 

Result : Repeated exposure may cause skin dryness or cracking.

Remarks : May cause skin irritation and/or dermatitis.

**Components:** 

Styrene:

Species : Rabbit

Result : Irritating to skin.

Species : human skin
Result : No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

Species : reconstructed human epidermis (RhE)

Method : OECD Test Guideline 439

Result : No skin irritation

GLP : yes

2-Phenylpropene:

Species : Rabbit

Result : Slight, transient irritation

methacrylic acid:

Method : OECD Test Guideline 404

Result : Corrosive after 3 minutes or less of exposure

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cobalt bis(2-ethylhexanoate):

Result : No skin irritation

**Hydroquinone:** 

Result : No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

**Product:** 

Remarks : Vapours may cause irritation to the eyes, respiratory system

and the skin.

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.

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

Species : Bovine cornea

Method : OECD Test Guideline 437

Result : No eye irritation

GLP : yes

2-Phenylpropene:

Species : Rabbit

Result : Irritating to eyes.

methacrylic acid:

Result : Corrosive

cobalt bis(2-ethylhexanoate):

Species : Rabbit

Method : OECD Test Guideline 405

Result : Irritating to eyes.

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Hydroquinone:

Result : Corrosive

# Respiratory or skin sensitisation

# Skin sensitisation

May cause an allergic skin reaction.

# Respiratory sensitisation

Not classified based on available information.

**Product:** 

Remarks : May cause allergic skin reaction.

#### **Components:**

Styrene:

Exposure routes : Skin contact Species : Guinea pig

Assessment : Does not cause skin sensitisation.

Result : negative

Exposure routes : inhalation (vapour)

Species : Humans

Assessment : Does not cause respiratory sensitisation.

Result : negative

# 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

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

Method : Maximisation Test

methacrylic acid:

Test Type : Buehler Test Species : Guinea pig

Assessment : Did not cause sensitisation on laboratory animals.

Method : OECD Test Guideline 406

cobalt bis(2-ethylhexanoate):

Test Type : Local lymph node assay

Species : Mouse

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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.

**Hydroquinone:** 

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

# Germ cell mutagenicity

Not classified based on available information.

### Components:

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

GLP: yes

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: yes

Test Type: in vitro assay

Test system: Chinese hamster fibroblasts

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

GLP: yes

2-Phenylpropene:

Genotoxicity in vitro : Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

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methacrylic acid:

Genotoxicity in vitro : Test Type: Ames test

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 487

Result: negative

Genotoxicity in vivo : Test Type: Mammalian bone marrow sister chromatid

exchange

Species: Rat (male) Cell type: Bone marrow

Method: OECD Test Guideline 475

Result: negative

Species: Mouse (male)

Method: OECD Test Guideline 478

Result: negative

Test Type: Micronucleus test Species: Mouse (male)

Cell type: peripheral blood cells Method: OECD Test Guideline 474

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

Hydroquinone:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test

Species: Mouse

Cell type: Bone marrow

Method: OECD Test Guideline 474

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Result: positive

Germ cell mutagenicity-

Assessment

Positive result(s) from in vivo somatic cell mutagenicity tests supported by positive results from in vitro mutagenicity assays or chemical structure activity relationship to known germ cell

mutagens

# Carcinogenicity

Not classified based on available information.

# **Components:**

Hydroquinone:

Carcinogenicity - Assessment

: Limited evidence of carcinogenicity in animal studies

#### Reproductive toxicity

Suspected of damaging the unborn child.

# **Components:**

Styrene:

Reproductive toxicity -

Assessment

: 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.

methacrylic acid:

Effects on fertility : Species: Rat

Application Route: Oral

Fertility: NOAEL Mating/Fertility: 400 mg/kg body weight Symptoms: No effects on fertility, No effects on reproduction

parameters

Method: OECD Test Guideline 416

Effects on foetal development

Species: Rabbit

**Application Route: Oral** 

Developmental Toxicity: NOAEL F1: 450 mg/kg body weight

Symptoms: No specific developmental abnormalities

Method: OECD Test Guideline 414

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# 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:**

Styrene:

Assessment : May cause respiratory irritation.

2-Phenylpropene:

Exposure routes : Inhalation

Target Organs : Respiratory Tract

Assessment : May cause respiratory irritation.

methacrylic acid:

Exposure routes : Inhalation

Target Organs : Respiratory Tract

Assessment : May cause respiratory irritation.

# STOT - repeated exposure

Causes damage to organs (hearing 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

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Application Route : inhalation (vapour)

Species : Human

: 615 mg/kg

Application Route : Skin contact

methacrylic acid:

Species : Rat, male and female

: 352 mg/m3

Application Route : inhalation (dust/mist/fume)

Exposure time : 90 Days Control Group : yes

Symptoms : Local irritation, Reduced body weight

# **Aspiration toxicity**

Not classified based on available information.

# **Components:**

## Styrene:

May be fatal if swallowed and enters airways.

# 11.2 Information on other hazards

# **Endocrine disrupting properties**

#### **Product:**

Assessment : The substance/mixture does not contain components

considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at

levels of 0.1% or higher.

# **Further information**

**Product:** 

Remarks : Solvents may degrease the skin.

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# **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

aquatic invertebrates

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

Exposure time: 48 h

Toxicity to algae/aquatic

plants

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

Exposure time: 72 h

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

mg/l

Exposure time: 96 h

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

Exposure time: 0,5 h

Toxicity to daphnia and other : NOEC: 1,01 mg/l

aquatic invertebrates (Chronic toxicity)

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

Toxicity to fish LC50 (Cyprinus carpio (Carp)): > 38 mg/l

> Exposure time: 96 h Test Type: semi-static test Test substance: WAF

Method: OECD Test Guideline 203

GLP: yes

Remarks: No toxicity at the limit of solubility

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Toxicity to daphnia and other :

aquatic invertebrates

(Daphnia magna (Water flea)): Exposure time: 48 h

Test Type: static test

Method: OECD Test Guideline 202

GLP: yes

Remarks: No toxicity at the limit of solubility

Toxicity to algae/aquatic

plants

ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100

mg/l

Exposure time: 72 h Test Type: static test

Method: OECD Test Guideline 201

GLP: yes

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l

Exposure time: 3 h Test Type: Static

Method: OECD Test Guideline 209

GLP: yes

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/aquatic

plants

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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methacrylic acid:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 85 mg/l

Exposure time: 96 h

Test Type: flow-through test

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 130 mg/l

Exposure time: 48 h

Test Type: flow-through test

Toxicity to algae/aguatic

plants

EC50 (Pseudokirchneriella subcapitata (green algae)): 20 mg/l

End point: Biomass Exposure time: 72 h

Test Type: flow-through test Method: OECD Test Guideline 201

Toxicity to fish (Chronic

toxicity)

NOEC: 10 mg/l

Exposure time: 35 d

Species: Danio rerio (zebra fish) Test Type: flow-through test Method: OECD Test Guideline 210

Toxicity to daphnia and other :

aquatic invertebrates

(Chronic toxicity)

NOEC: 53 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Test Type: flow-through test Method: OECD Test Guideline 211

cobalt bis(2-ethylhexanoate):

M-Factor (Acute aquatic

toxicity)

**Ecotoxicology Assessment** 

Acute aquatic toxicity Very toxic to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

**Hydroquinone:** 

Toxicity to fish LC50 (Oncorhynchus mykiss (rainbow trout)): 0,638 mg/l

Exposure time: 96 h

Test Type: flow-through test

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 0,134 mg/l

Exposure time: 48 h

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Test Type: static test

Method: OECD Test Guideline 202

Toxicity to algae/aquatic

plants

EC50 (Pseudokirchneriella subcapitata (microalgae)): 0,053

mg/l

End point: Growth inhibition

Exposure time: 72 h Test Type: static test

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (microalgae)): 0,0015

mg/l

End point: Growth inhibition Exposure time: 72 h

Test Type: static test Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

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Toxicity to daphnia and other : NOEC: 0,0029 mg/l

aquatic invertebrates (Chronic toxicity)

NOEC: 0,0029 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Test Type: semi-static test

Method: OECD Test Guideline 211

#### 12.2 Persistence and degradability

#### **Components:**

Styrene:

Biodegradability : Result: Readily biodegradable.

Biodegradation: > 60 % Exposure time: 10 d

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with maleic anhydride and methacrylic acid:

Biodegradability : Result: Not readily biodegradable.

2-Phenylpropene:

Biodegradability : Test Type: aerobic

Inoculum: activated sludge Result: Not readily biodegradable.

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Biodegradation: 21 % Exposure time: 28 d

Method: OECD Test Guideline 301F

methacrylic acid:

Biodegradability : Inoculum: activated sludge

Result: Readily biodegradable.

Biodegradation: 87 % Exposure time: 28 d

cobalt bis(2-ethylhexanoate):

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 % Exposure time: 10 d

Method: OECD Test Guideline 301B

**Hydroquinone:** 

Biodegradability : Result: Readily biodegradable.

Biodegradation: 70 % Exposure time: 14 d

Method: OECD Test Guideline 301C

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

methacrylic acid:

Bioaccumulation : Bioconcentration factor (BCF): 1,0

Remarks: Bioaccumulation is unlikely.

Partition coefficient: n- : log Pow: 0,93

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octanol/water

Hydroquinone:

Partition coefficient: n-

octanol/water

: log Pow: 0,59

12.4 Mobility in soil

**Components:** 

Styrene:

Distribution among

environmental compartments

: Koc: 352

12.5 Results of PBT and vPvB assessment

**Product:** 

Assessment : This substance/mixture contains no components considered

to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of

0.1% or higher.

**Components:** 

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).

2-Phenylpropene:

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).

methacrylic acid:

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).

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# cobalt bis(2-ethylhexanoate):

Assessment : Remarks: Not applicable

**Hydroquinone:** 

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 Endocrine disrupting properties

**Product:** 

Assessment : The substance/mixture does not contain components

considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at

levels of 0.1% or higher.

#### 12.7 Other adverse effects

**Product:** 

Additional ecological

information

: An environmental hazard cannot be excluded in the event of

unprofessional handling or disposal.

Toxic to aquatic life.

# **SECTION 13: Disposal considerations**

# 13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water

courses or the soil.

Do not contaminate ponds, waterways or ditches with

chemical or used container.

Send to a licensed waste management company.

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.

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**SECTION 14: Transport information** 

**SECTION 14: Transport information** 

#### 14.1 UN number

**ADN**: UN1866 **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

ADN: RESIN SOLUTION 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)

**ADN**: 3 **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

ADN: III ADR: III

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

INTERNATIONAL MARITIME DANGEROUS GOODS: |||

RID: III

# 14.5 Environmental hazards

**ADN:** Not applicable **ADR:** Not applicable

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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.

# **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

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and

import of dangerous chemicals

: Not applicable

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

considered:

Conditions of restriction for the

following entries should be

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

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Quantity 1 Quantity 2

P5c FLAMMABLE LIQUIDS 5.000 t 50.000 t

Other regulations : Take note of Directive 92/85/EEC regarding maternity

protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young

people at work or stricter national regulations, where

applicable.

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

TCSI : On the inventory, or in compliance with the inventory

TSCA On or in compliance with the active portion of the TSCA

inventory

AllC On the inventory, or in compliance with the inventory

DSL This product contains one or several components that are not

on the Canadian DSL and have annual quantity limits.

ENCS Not in compliance with the inventory

KECI Not in compliance with the inventory

PICCS Not in compliance with the inventory

IECSC On the inventory, or in compliance with the inventory

NZIoC Not in compliance with the inventory

#### **Inventories**

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

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### 15.2 Chemical safety assessment

No data available

### **SECTION 16: Other information**

### **Further information**

Revision Date: 10.11.2022

## Classification procedure:

| H226  | Flammable liquid and vapour.                                    | Based on product data or assessment |
|-------|---|-------------------------------------|
| H315  | Causes skin irritation.   | Calculation method                  |
| H319  | Causes serious eye irritation.                                  | Calculation method                  |
| H317  | May cause an allergic skin reaction.                            | 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**

| H226   | Flammable liquid and vapour.                                    |
|--------|---|
| H302   | Harmful if swallowed.   |
| H304   | May be fatal if swallowed and enters airways.                   |
| H311   | Toxic 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.                                  |
| H332   | Harmful if inhaled.   |
| H335   | May cause respiratory irritation.                               |
| H341   | Suspected of causing genetic defects.                           |
| H351   | Suspected of causing cancer.                                    |
| 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. |
| H400   | Very toxic to aquatic life.                                     |
| H410   | Very toxic to aquatic life with long lasting effects.           |
| H411   | Toxic to aquatic life with long lasting effects.                |

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**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

**OEL**: Occupational Exposure Limit

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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

REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals

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

WGK: German Water Hazard Class

ES/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

| 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                                 | ERC 6d Production of resins/rubbers  |
| and corresponding ERC   |  |
| Name(s) of contributing worker scenarios and                                | PROC 10 - Roller application or brushing   |
| corresponding PROCs   | 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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| and freehunter dilution factor                                  | 140   |  |
|---|---|--|
| 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 %   |  |
| raction tonnage to region                                       | 10 %  |  |
| Fraction used at main source                                    | 60 %  |  |
| STP   | yes   |  |
| River flow rate   | 18000 m³/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<br>Assessment Report on Styrene,European Communities,<br>2002))  |  |
| Fraction released to industrial soil (Femis.ind)                | 0 % (justification: No direct release to soil (EU Risk<br>Assessment Report on Styrene,European Communities,<br>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 Worstcase<br>European manufacturing site )  |  |
| Fraction of emission directed to water by local STP Fstp.water) | 0.081 - (justification: Efficiency STP 97.9%)   |  |
| 7.2 Contributing Scenario (2) controlling                       | industrial 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, filament winding  |  |
| Qualitative Risk Assessment                                     |   |  |
| 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 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   |   |  |

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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 mar  | nagement  |  |
| Exposed skin surface                      | 960 cm <sup>2</sup>   |  |
| Other given operational conditions affect | ing workers exposure  |  |
| Location                                  | indoors   |  |
| Ventilation                               | enhanced (70%)  |  |
| Domain                                    | industrial  |  |
| Technical conditions and measures to co   | ntrol dispersion and exposure   |  |
| Local exhaust ventilation                 | no  |  |
| Conditions and measures related to person | onal protection, hygiene and health evaluation  |  |
| Protective gloves                         | Gloves APF 5 80 %   |  |
| Respiratory protection                    | no  |  |
| 7.3 Contributing Scenario (3) cont        | rolling 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 workers exposure                                      |  |  |
| Location Domain  | indoors  |  |
|  |  |  |
| Technical conditions and measures to control dispersion and exposure  Local exhaust ventilation no |  |  |
| Conditions and measures related to personal pro  | no   |  |
|  |  |  |
| 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 workers exposure                         |   |  |
|---|---|--|
| Location  | indoors   |  |
| Ventilation   | good (30%)  |  |
| Domain  | industrial  |  |
| Technical conditions and measures to  | control dispersion and exposure   |  |
| Local exhaust ventilation   | no  |  |
| Conditions and measures related to pe   | ersonal protection, hygiene and health evaluation   |  |
| Protective gloves   | Gloves APF 5 80 %   |  |
| Respiratory protection  | 90 %  |  |
| 7.5 Contributing Scenario (5) co  | ontrolling 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 r  | nanagement  |  |
| Exposed skin surface  | 960 cm <sup>2</sup>   |  |
| Other given operational conditions affe   | ecting workers 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 %   |  |

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| Respiratory protection  | no   |  |
|---|--|--|
| 7.6 Contributing Scenario (6) controlling                                       | g 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 management                                 |  |  |
| Exposed skin surface  | 480 cm <sup>2</sup>  |  |
| Other given operational conditions affecting wo                                 | rkers exposure   |  |
| Location  | indoors  |  |
| Domain  | industrial   |  |
| Technical conditions and measures to control d                                  | ispersion and exposure   |  |
| Local exhaust ventilation   | yes (inhalation 90 %)  |  |
| Conditions and measures related to personal pr                                  | otection, hygiene and health evaluation  |  |
| Protective gloves   | No   |  |
| Respiratory protection  | no   |  |
| 7.7 Contributing Scenario (7) controlling 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 n                               | nanagement  |  |
| Exposed skin surface   | 480 cm <sup>2</sup>   |  |
| Other given operational conditions affe                              | ecting 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 pe                                | ersonal protection, hygiene and health evaluation   |  |
| Protective gloves  | Gloves APF 5 80 %   |  |
| Respiratory protection   | no  |  |
| 7.8 Contributing Scenario (8) co                                     | ntrolling 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 management               |   |  |  |
| Exposed skin surface  | 480 cm <sup>2</sup>   |  |  |
| Other given operational conditions affecting we               | 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 p                 | 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) controlling                     | 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 management               |   |  |  |
| Exposed skin surface  | 240 cm <sup>2</sup>   |  |  |
| Other given operational conditions affecting workers exposure |   |  |  |

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| Location   | indoors  |  |
|--|--|--|
| Ventilation  | good (30%)   |  |
| Domain   | industrial   |  |
| Technical conditions and measures to control dis                           |  |  |
|  | Ī  |  |
| Local exhaust ventilation  | no   |  |
| Conditions and measures related to personal pro                            |  |  |
| Protective gloves  | Gloves APF 5 80 %  |  |
| Respiratory protection   | no   |  |
| 7.10 Contributing Scenario (10) controlli                                  | ng 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  |  |  |
| 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                            |  |  |
|  | 80 cm <sup>2</sup>   |  |
| Other given operational conditions affecting workers exposure              |  |  |
| Location   | indoors  |  |
| Ventilation  | enhanced (70%)   |  |
| Domain   | industrial   |  |
| Technical conditions and measures to control dispersion and exposure       |  |  |
| Local exhaust ventilation  Conditions and measures related to personal pro | no   |  |
|  | Gloves APF 5 80 %  |  |
| Protective gloves  |  |  |
| Respiratory protection   | no   |  |

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| Name of contributing scenario                      | 3 - Use in closed batch process (synthesis or formulation)  |
|--|---|
| Scenario subtitle                                  | Material transfers [CS3]. Product delivery/storage - delivery or  |
|  | 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.  |
| Book and all and a state of                        | Use suitable chemically resistant gloves.   |
| Product characteristics                            | Te - i  |
| Physical state                                     | liquid  |
| Concentration in substance                         | 100 %   |
| Fugacity / Dustiness Frequency and duration of use | medium  |
| 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           |   |
|  |   |
| 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  |
| <u> </u>   | 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.   |  |
|--|---|--|
| Duradical about attacks  | 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 management                      |   |  |
| 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                               | rsonal 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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| 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  | no  |  |
| Conditions and measures related to persona                           | I 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) contri                               | 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 manag                           |   |  |
| Exposed skin surface   | 240 cm <sup>2</sup>   |  |
| Other given operational conditions affecting                         |   |  |
| Location   | indoors   |  |
| Domain   | industrial  |  |
| Technical conditions and measures to control                         | · ·   |  |
| Local exhaust ventilation  | no  |  |
| Conditions and measures related to persona                           | · T   |  |
| Protective gloves  | Gloves APF 5 80 %   |  |
| Respiratory protection   | no  |  |

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| 7.15 Contributing Scenario (15) c                             | ontrolling 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 ma                       | anagement   |  |
| Exposed skin surface  | 960 cm <sup>2</sup>   |  |
| Other given operational conditions affecting workers exposure |   |  |
| Location  | indoors   |  |
| Domain  | industrial  |  |
| Technical conditions and measures to c                        | ontrol 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  |  |

# 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       | EDDtiiti  |
|--|---|
| Free Short title                                     | FRP manufacturing in a professional setting, using UP/VE resins and/or formulated resins (gelcoat, bonding paste, putty |
|  | 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  |
|  |   |
| 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                        | g 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 management                  | ent  |
| Exposed skin surface   | 960 cm <sup>2</sup>  |
| Other given operational conditions affecting wor                 | rkers exposure   |
| Location   | indoors  |
| Ventilation  | good (30%)   |
| Domain   | professional   |
| Technical conditions and measures to control d                   | ispersion and exposure   |
| Local exhaust ventilation  | no   |
| Conditions and measures related to personal pro-                 |  |
| Protective gloves  | Gloves APF 5 80 %  |
| Respiratory protection   | 90 %   |
| 8.3 Contributing Scenario (3) controlling                        | g professional worker exposure for PROC 11   |
| Name of contributing scenario                                    | 11 - Non industrial spraying   |
| Traine or contributing co  |  |

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|  | applications where resinctic application according to an   |
|--|--|
|  | 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                        | The second spraying and chop-noop marrient winding   |
|  | Management in the set it was the   |
| 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 management    | nt   |
| Exposed skin surface                               | 1,500 cm <sup>2</sup>  |
| Other given operational conditions affecting world | 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                             | 95 %   |

| 8.4 Contributing Scenario (4) controlling 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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| 0 1                                       |   |
|---|---|
| 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 ma   | nagement  |
| Exposed skin surface                      | 960 cm <sup>2</sup>   |
| Other given operational conditions affect | ting workers exposure   |
| Location                                  | indoors   |
| Ventilation                               | good (30%)  |
| Domain                                    | professional  |
| Technical conditions and measures to co   | ontrol dispersion and exposure  |
| Local exhaust ventilation                 | no  |
| Conditions and measures related to pers   | onal protection, hygiene and health evaluation  |
| Protective gloves                         | Gloves APF 5 80 %   |
| Respiratory protection                    | 90 %  |
| 8.5 Contributing Scenario (5) con         | 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 floorings, mastics, coatings, castings   |

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| AME 5000™ INF-90 LV RESIN                          | Version: 3.1              |
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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                           |   |
| 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                              | 960 cm <sup>2</sup>   |
| Other given operational conditions affecting work | 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 %  |
| 8.6 Contributing Scenario (6) controlling         | 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             | <u>'</u>  |
| 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 n  | nanagement  |
| Exposed skin surface                    | 480 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 %  |

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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             |   |
| 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 n  | nanagement  |
| Exposed skin surface                    | 480 cm <sup>2</sup>   |
| Other given operational conditions affe | ecting 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 pe   | 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             | <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                 |   |
| 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 affe | 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  | rsonal 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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