SAFETY DATA SHEET
POTASSIUM BIFLUORIDE

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: POTASSIUM BIFLUORIDE
REACH registered number(s): 01-211960644-32-XXXX
CAS number: 7789-29-9
EINECS number: 232-156-2
Index number: 009-008-00-9
Product code: 7570-025
Synonyms: POTASSIUM ACID FLUORIDE
POTASSIUM HYDROGEN DIFLUORIDE

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


1.3. Details of the supplier of the safety data sheet

Company name: Resource Chemical Ltd
Resource House
76 High Street
Brackley
Northants
NN13 7DS
Tel: +44(0)1280 843800
Fax: +44(0)1280 701745
Email: sales@resourcechemical.ltd.uk

1.4. Emergency telephone number

Emergency tel: +44(0)1270 502891

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Acute Tox. 3: H301; Skin Corr. 1B: H314
Most important adverse effects: Toxic if swallowed. Causes severe skin burns and eye damage.

2.2. Label elements

Label elements:
Hazard statements: H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.

[cont...]
Signal words: Danger
Hazard pictograms: GHS05: Corrosion
GHS06: Skull and crossbones

Precautionary statements:
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER/doctor/physician.

2.3. Other hazards
PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: POTASSIUM BIFLUORIDE
CAS number: 7789-29-9
EINECS number: 232-156-2
REACH registered number(s): 01-2119960644-32-XXXX

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Transfer to hospital if there are burns or symptoms of poisoning. Massage calcium gluconate gel into burnt area.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Wash out mouth with water. Do not induce vomiting. Give 1 cup of water to drink every 10 minutes. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. Transfer to hospital as soon as possible. Give 6 effervescent soluble calcium tablets.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious and breathing is OK, place in the recovery position. If conscious, ensure the casualty sits or lies down. If breathing becomes bubbly, have the casualty sit and provide oxygen if available. Transfer to hospital as soon as possible.
4.2. Most important symptoms and effects, both acute and delayed

**Skin contact:** Blistering may occur. Progressive ulceration will occur if treatment is not immediate.

**Eye contact:** Corneal burns may occur. May cause permanent damage.

**Ingestion:** Corrosive burns may appear around the lips. Blood may be vomited. There may be bleeding from the mouth or nose.

**Inhalation:** There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing.

**Delayed / immediate effects:** Immediate effects can be expected after short-term exposure.

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

**Immediate / special treatment:** Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. Eye bathing equipment should be available on the premises.

Section 5: Fire-fighting measures

5.1. Extinguishing media

**Extinguishing media:** Suitable extinguishing media for the surrounding fire should be used. Do not use water.

5.2. Special hazards arising from the substance or mixture

**Exposure hazards:** Corrosive. Toxic. In combustion emits toxic fumes.

5.3. Advice for fire-fighters

**Advice for fire-fighters:** Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions:** Notify the police and fire brigade immediately. If outside keep bystanders upwind and away from danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Do not attempt to take action without suitable protective clothing - see section 8 of SDS. Do not create dust.

6.2. Environmental precautions

**Environmental precautions:** Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

**Clean-up procedures:** Clean-up should be dealt with only by qualified personnel familiar with the specific substance. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

6.4. Reference to other sections

**Reference to other sections:** Refer to section 8 of SDS. Refer to section 13 of SDS.
Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of dust in the air. Use only with closed system ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed.

7.3. Specific end use(s)

Specific end use(s): No special requirement.

Section 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Workplace exposure limits:</th>
<th>Respirable dust</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>8 hour TWA</td>
</tr>
<tr>
<td>UK</td>
<td>2.5 mg/m3</td>
</tr>
</tbody>
</table>

DNEL/PNEC Values

<table>
<thead>
<tr>
<th>POTASSIUM BIFLUORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>DNEL</td>
</tr>
<tr>
<td>DNEL</td>
</tr>
<tr>
<td>DNEL</td>
</tr>
<tr>
<td>PNEC</td>
</tr>
<tr>
<td>PNEC</td>
</tr>
<tr>
<td>PNEC</td>
</tr>
<tr>
<td>PNEC</td>
</tr>
<tr>
<td>PNEC</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protective device with particle filter. Particle filter class P2S (EN143). Self-contained breathing apparatus must be available in case of emergency.


Eye protection: Tightly fitting safety goggles. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: Refer to specific Member State legislation for requirements under Community environmental legislation.
Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- **State:** Solid
- **Colour:** White
- **Odour:** Pungent
- **Evaporation rate:** No data available.
- **Oxidising:** Non-oxidising (by EC criteria)
- **Solubility in water:** Soluble
- **Viscosity:** No data available.
- **Boiling point/range °C:** No data available.
- **Melting point/range °C:** 239.5
- **Flammability limits %: lower:** No data available.
- **Flashing point °C:** No data available.
- **Auto-flammability °C:** >400
- **Relative density:** 2.37
- **VOC g/l:** No data available.

9.2. Other information

- **Other information:** No data available.

Section 10: Stability and reactivity

10.1. Reactivity

- **Reactivity:** Stable under recommended transport or storage conditions.

10.2. Chemical stability

- **Chemical stability:** Stable under normal conditions.

10.3. Possibility of hazardous reactions

- **Hazardous reactions:** Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

- **Conditions to avoid:** Heat.

10.5. Incompatible materials

- **Materials to avoid:** Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

- **Haz. decomp. products:** In combustion emits toxic fumes of hydrogen fluoride.

Section 11: Toxicological information

11.1. Information on toxicological effects

[cont...]
SAFETY DATA SHEET
POTASSIUM BIFLUORIDE

Toxicity values:

<table>
<thead>
<tr>
<th>Route</th>
<th>Species</th>
<th>Test</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORL</td>
<td>RAT</td>
<td>LD50</td>
<td>52-250</td>
<td>mg/kg</td>
</tr>
</tbody>
</table>

Relevant hazards for substance:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Route</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (ac. tox. 3)</td>
<td>ING</td>
<td>Hazardous: calculated</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>DRM</td>
<td>Hazardous: calculated</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>OPT</td>
<td>Hazardous: calculated</td>
</tr>
</tbody>
</table>

Symptoms / routes of exposure

- **Skin contact:** Blistering may occur. Progressive ulceration will occur if treatment is not immediate.
- **Eye contact:** Corneal burns may occur. May cause permanent damage.
- **Ingestion:** Corrosive burns may appear around the lips. Blood may be vomited. There may be bleeding from the mouth or nose.
- **Inhalation:** There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing.
- **Delayed / immediate effects:** Immediate effects can be expected after short-term exposure.
- **Other information:** Not applicable.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values:

<table>
<thead>
<tr>
<th>Species</th>
<th>Test</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daphnia magna</td>
<td>48H EC50</td>
<td>48</td>
<td>mg/l</td>
</tr>
<tr>
<td>FISH</td>
<td>96H LC50</td>
<td>51</td>
<td>mg/l</td>
</tr>
<tr>
<td>ALGAE</td>
<td>96H ErC50</td>
<td>43</td>
<td>mg/l</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

Persistence and degradability: Not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: Bioaccumulation potential.

12.4. Mobility in soil

Mobility: Absorbed only slowly into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.
12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Mix or dissolve with a combustible material and burn in a chemical incinerator equipped with afterburners and scrubbers.

Disposal of packaging: Dispose of in a regulated landfill site or other method for hazardous or toxic wastes.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1811

14.2. UN proper shipping name

Shipping name: POTASSIUM HYDROGENIFLUORIDE, SOLID

14.3. Transport hazard class(es)

Transport class: 8 (6.1)

14.4. Packing group

Packing group: II

14.5. Environmental hazards

Environmentally hazardous: No

Marine pollutant: No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: E

Transport category: 2

Section 15: Regulatory information

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

Specific regulations: This product is a Seveso category/named substance in Annex I of Council Directive 96/82/EC.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier.
Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010. This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

Phrases used in s.2 and s.3: H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.
Annex

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1. ES1 : Manufacture of substance, (fluor electrolysis)

1.1. Scenario description

Main User Groups : SU 3  Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU8  Manufacture of bulk, large scale chemicals (including petroleum products)
                   : SU9  Manufacture of fine chemicals
Environmental release category : ERC4  Industrial use of processing aids in processes and products, not becoming part of articles
Process category : PROC1  Use in closed process, no likelihood of exposure
                   : PROC2  Use in closed, continuous process with occasional controlled exposure
Product category : PC19  Intermediate

1.2. Conditions of use affecting exposure
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

POTASSIUM HYDROGEN DIFLUORIDE

1.2.1 Contributing scenario controlling environmental exposure for: ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. Onsite STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used : 100 t
Maximum daily site tonnage (kg/day): 333 kg
Local daily emission to waste water : 15.55 kg
Maximum daily local emission to air : 3.4 kg
Local daily emission to soil : 16.65 kg

Environmental factors
Flow rate : 18,000 m³/d
Dilution Factor (River) : 20

Other given operational conditions affecting environmental exposure
Number of emission days per year : 300

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m³/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

1.2.2 Contributing scenario controlling environmental exposure for: ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. Municipal STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used : 1.5 t
Maximum daily site tonnage (kg/day): 7 kg

Environmental factors
Flow rate : 18,000 m³/d

Other given operational conditions affecting environmental exposure
Number of emission days per year : 300

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP
Flow rate of sewage treatment plant effluent : 2,000 m³/d
1.2.3 Contributing scenario controlling worker exposure for: PROC1 Use in closed process, no likelihood of exposure

**Product characteristics**
- Concentration of the Substance in Mixture/Article
- Physical Form (at time of use)

Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Frequency and duration of use**
- Exposure duration: < 8 h

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Remarks: Assumes activities are at ambient temperature (unless stated differently).

**Technical conditions and measures**
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear suitable gloves tested to EN374.
- Use suitable eye protection.

1.2.4 Contributing scenario controlling worker exposure for: PROC2 Use in closed, continuous process with occasional controlled exposure

**Product characteristics**
- Concentration of the Substance in Mixture/Article
- Physical Form (at time of use)

Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Frequency and duration of use**
- Exposure duration: < 8 h

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Remarks: Assumes activities are at ambient temperature (unless stated differently).

**Technical conditions and measures**
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).
- Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear suitable gloves tested to EN374.
- Use suitable eye protection.
### 1.3. Exposure estimation and reference to its source

#### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC4 Local PEC</td>
<td>Fresh water</td>
<td>0.4 mg/l</td>
<td>0.444</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.33 mg/kg (dw)</td>
<td>0.946</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>0 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.006 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.383 mg/l</td>
<td>0.426</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.193 mg/kg (dw)</td>
<td>0.907</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>3.479 mg/l</td>
<td>0.088</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.26 mg/kg (dw)</td>
<td>0.024</td>
<td></td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>

#### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.01 mg/m³</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>0.04 mg/m³</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.1 mg/m³</td>
<td>0.032</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>0.4 mg/m³</td>
<td>0.078</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC4 Exposure Assessment Method : Used EUSES model.
1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

1.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES. The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1.4.2 Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
2. ES2 : Used as chemical intermediate

2.1. Scenario description

Main User Groups : SU 3  
Industrial uses: Uses of substances as such or in preparations at industrial sites

Sectors of end-use : SU8  
Manufacture of bulk, large scale chemicals (including petroleum products)

Environmental release category : ERC6a  
Industrial use resulting in manufacture of another substance (use of intermediates)

Process category : PROC2  
Use in closed, continuous process with occasional controlled exposure

PROC3  
Use in closed batch process (synthesis or formulation)

2.2. Conditions of use affecting exposure

2.2.1 Contributing scenario controlling environmental exposure for: ERC6a Industrial use resulting in manufacture of another substance (use of intermediates), Onsite STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximum daily site tonnage (kg/day): 750 kg
Maximal annual amount used: 75 t
Local daily emission to waste water: 15 kg
Maximum daily local emission to air: 11 kg
Local daily emission to soil: 0.75 kg

Environmental factors
Flow rate: 18,000 m3/d
Dilution Factor (River): 20

Other given operational conditions affecting environmental exposure
Continuous exposure
Number of emission days per year: 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Onsite STP
Flow rate of sewage treatment plant effluent: 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Neutralisation of the effluents before releases should be considered.

2.2.2 Contributing scenario controlling environmental exposure for: ERC6a Industrial use resulting in manufacture of another substance (use of intermediates), Municipal STP

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to 100 %
Mixture/Article (unless stated differently).

**Amount**
- Maximal annual amount used: 30 t
- Maximum daily site tonnage (kg/day): 300 kg

**Environmental factors**
- Flow rate: 18,000 m³/d

**Other given operational conditions affecting environmental exposure**
- Number of emission days per year: 100

**Conditions and measures related to sewage treatment plant**
- Type of Sewage Treatment Plant: Municipal STP
- Flow rate of sewage treatment plant effluent: 2,000 m³/d

2.2.3 Contributing scenario controlling worker exposure for: PROC2 Use in closed, continuous process with occasional controlled exposure, PROC3 Use in closed batch process (synthesis or formulation)

**Product characteristics**
- Concentration of the Substance in Mixture/Article (unless stated differently):
  - Covers the percentage of the substance in the product up to 100 %
- Physical Form (at time of use): Dustiness: High

**Frequency and duration of use**
- Exposure duration: < 8 h

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Remarks: Assumes activities are at ambient temperature (unless stated differently).

**Technical conditions and measures**
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).
- Local exhaust ventilation - efficiency of at least (Effectiveness of a measure): 90 %

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear suitable gloves tested to EN374.
- Use suitable eye protection.
### 2.3. Exposure estimation and reference to its source

#### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
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<td>3.33 mg/kg (dw)</td>
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<td>STP</td>
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<td>0.006 mg/kg (dw)</td>
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<td>Marine water</td>
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<td>STP</td>
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<td>Air</td>
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#### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
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<td>Worker - inhalative, long-term - systemic</td>
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<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>0.4 mg/m³</td>
<td>0.078</td>
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</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

**ERC6a**
Exposure Assessment Method: Used EUSES model.

**PROC2, PROC3**
Exposure Assessment Method: ECETOC TRA v3.0 worker
2.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

2.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES. The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

2.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
3. ES3 : Use in formulation

3.1. Scenario description

Main User Groups : SU 3
Environmental release category : ERC2
Process category : PROC2

3.2. Conditions of use affecting exposure

3.2.1 Contributing scenario controlling environmental exposure for: ERC2 Formulation of preparations, Onsite STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximum daily site tonnage (kg/day) : 3,500 kg
Maximal annual amount used : 175 t
Local daily emission to waste water : 15.55 kg
Maximum daily local emission to air : 20 kg
Local daily emission to soil : 0.35 kg

Environmental factors
Flow rate : 18,000 m3/d
Dilution Factor (River) : 20

Other given operational conditions affecting environmental exposure
Continuous exposure
Number of emission days per year : 50

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

3.2.2 Contributing scenario controlling environmental exposure for: ERC2 Formulation of preparations, Municipal STP
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

POTASSIUM HYDROGEN DIFLUORIDE

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used: 60 t
Maximum daily site tonnage (kg/day): 300 kg

Environmental factors
Flow rate: 18,000 m³/d

Other given operational conditions affecting environmental exposure
Number of emission days per year: 50

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP
Flow rate of sewage treatment plant effluent: 2,000 m³/d

3.2.3 Contributing scenario controlling worker exposure for: PROC2 Use in closed, continuous process with occasional controlled exposure

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use): Dustiness: High

Frequency and duration of use
Exposure duration: < 8 h

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Remarks: Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.
Use suitable eye protection.

3.2.4 Contributing scenario controlling worker exposure for: PROC3 Use in closed batch process (synthesis or formulation), PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use): Dustiness: High

Frequency and duration of use
Exposure duration: < 8 h

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Remarks: Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear a respirator conforming to EN141 with Type A/P2 filter or better.
Use suitable eye protection.
### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
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<th>Environmental exposure</th>
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<tr>
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<td>Local PEC</td>
<td>Fresh water</td>
<td>0.4 mg/l</td>
<td>0.444</td>
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<td></td>
<td>Fresh water sediment</td>
<td>3.33 mg/kg (dw)</td>
<td>0.946</td>
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<td>STP</td>
<td>0 mg/l</td>
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<td>Agricultural soil</td>
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<td>ERC2</td>
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<td>2.982 mg/l</td>
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### Human Health

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<tr>
<th>Contributing Scenario</th>
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<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
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<td>PROC2</td>
<td>Worker - inhalative, long-term -</td>
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<td>Worker - inhalative, short-term -</td>
<td>0.4 mg/m³</td>
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### 3.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

#### 3.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

#### 3.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
4. ES4 : Industrial use, soldering, welding, brazing

4.1. Scenario description

Main User Groups : SU 3  Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU17  General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Environmental release category : ERC5  Industrial use resulting in inclusion into or onto a matrix
Process category : PROC7  Industrial spraying
PROC10  Roller application or brushing
PROC13  Treatment of articles by dipping and pouring
PROC24  High (mechanical) energy work-up of substances bound in materials and/ or articles
Product category : PC38  Welding and soldering products (with flux coatings or flux cores.), flux products

4.2. Conditions of use affecting exposure

4.2.1 Contributing scenario controlling environmental exposure for: ERC5 Industrial use resulting in inclusion into or onto a matrix. Onsite STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used : 15 t
Maximum daily site tonnage (kg/day): : 150 kg
Local daily emission to waste water : 15.55 kg
Maximum daily local emission to air : 11 kg
Local daily emission to soil : 1.5 kg

Environmental factors
Flow rate : 18,000 m³/d
Dilution Factor (River) : 20

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m³/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

4.2.2 Contributing scenario controlling environmental exposure for: ERC5 Industrial use resulting in inclusion into or onto a matrix. Municipal STP
### Product characteristics

**Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Amount**
- Maximum daily site tonnage (kg/day): 15 kg
- Maximal annual amount used: 3 t

**Environmental factors**
- **Flow rate**: 18,000 m³/d

**Other given operational conditions affecting environmental exposure**
- Number of emission days per year: 100

**Conditions and measures related to sewage treatment plant**
- Type of Sewage Treatment Plant: Municipal STP
- Flow rate of sewage treatment plant effluent: 2,000 m³/d

#### 4.2.3 Contributing scenario controlling worker exposure for: PROC7 Industrial spraying

**Product characteristics**
- **Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 35 %
- **Physical Form (at time of use)**: liquid

**Frequency and duration of use**
- **Exposure duration (far field)**: 240 min

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Room size: 300 m³
- Ventilation rate per hour: 1
- Remarks: Assumes activities are at ambient temperature (unless stated differently).

**Technical conditions and measures**
with local exhaust ventilation

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear a full face respirator conforming to EN136 with Type A/P2 filter or better., Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable working clothes.

#### 4.2.4 Contributing scenario controlling worker exposure for: PROC10 Roller application or brushing, PROC13 Treatment of articles by dipping and pouring

**Product characteristics**
- **Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 35 %
- **Physical Form (at time of use)**: liquid
SAFETY DATA SHEET
to Regulation (EC) No. 1907/2006

POTASSIUM HYDROGEN DIFLUORIDE

**Frequency and duration of use**
Exposure duration (near field) : 240 min

**Other operational conditions affecting workers exposure**
Outdoor / Indoor : Indoor
Room size : 300 m³
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

**Technical conditions and measures**
with local exhaust ventilation

**Conditions and measures related to personal protection, hygiene and health evaluation**
Use suitable eye protection., Wear suitable gloves tested to EN374.

---

**4.2.5 Contributing scenario controlling worker exposure for: PROC24 High (mechanical) energy work-up of substances bound in materials and/or articles**

**Product characteristics**
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid mixture

**Frequency and duration of use**
Exposure duration : < 8 h

**Other operational conditions affecting workers exposure**
Outdoor / Indoor : Indoor
Remarks : > melting point

**Technical conditions and measures**
Provide a basic standard of general ventilation (1 to 3 air changes per hour) .
Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 80 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear a respirator conforming to EN141 with Type A/P2 filter or better.
Use suitable eye protection., Wear suitable gloves tested to EN374.
## 4.3. Exposure estimation and reference to its source

### Environment

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<td>Fresh water</td>
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<td>STP</td>
<td>0 mg/l</td>
<td>&lt; 0.01</td>
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<tr>
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<td></td>
<td>Agricultural soil</td>
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<td>&lt; 0.01</td>
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<tr>
<td>Regional PEC</td>
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<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
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<td>Fresh water</td>
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<tr>
<td>PROC7</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.65 mg/m³</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>2.6 mg/m³</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>PROC10</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.4 mg/m³</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>1.6 mg/m³</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>PROC13</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.004 mg/m³</td>
<td>0.0013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.016 mg/m³</td>
<td>0.0031</td>
<td></td>
</tr>
<tr>
<td>PROC24</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.2 mg/m³</td>
<td>0.065</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, short-term</td>
<td>0.8 mg/m³</td>
<td>0.157</td>
<td></td>
</tr>
</tbody>
</table>
4.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
5. ES5 : Industrial use, soldering, welding, brazing

5.1. Scenario description

Main User Groups : SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Environmental release category : ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
Process category : PROC22 Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting
PROC25 Other hot work operations with metals
Product category : PC38 Welding and soldering products (with flux coatings or flux cores.), flux products

5.2. Conditions of use affecting exposure

5.2.1 Contributing scenario controlling environmental exposure for: ERC4 Industrial use of processing aids in processes and products, not becoming part of articles, Onsite STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used : 15 t
Maximum daily site tonnage (kg/day) : 150 kg
Local daily emission to waste water : 15.55 kg
Maximum daily local emission to air : 11 kg
Local daily emission to soil : 7.5 kg

Environmental factors
Flow rate : 18,000 m3/d
Dilution Factor (River) : 20

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

5.2.2 Contributing scenario controlling environmental exposure for: ERC4 Industrial use of processing aids in processes and products, not becoming part of articles, Municipal STP

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount:
- Maximal annual amount used: 1.5 t
- Maximum daily site tonnage (kg/day): 7 kg

Environmental factors:
- Flow rate: 18,000 m³/d

Other given operational conditions affecting environmental exposure:
- Number of emission days per year: 100

Conditions and measures related to sewage treatment plant:
- Type of Sewage Treatment Plant: Municipal STP
- Flow rate of sewage treatment plant effluent: 2,000 m³/d

5.2.3 Contributing scenario controlling worker exposure for: PROC22 Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting

Product characteristics:
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
- Physical Form (at time of use): Solid mixture

Frequency and duration of use:
- Exposure duration: < 8 h

Other operational conditions affecting workers exposure:
- Outdoor / Indoor: Indoor
- Remarks: > melting point

Technical conditions and measures:
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).
- Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation:
- Wear a respirator conforming to EN141 with Type A/P2 filter or better.
- Use suitable eye protection., Wear suitable gloves tested to EN374.

5.2.4 Contributing scenario controlling worker exposure for: PROC25 Other hot work operations with metals

Product characteristics:
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
- Physical Form (at time of use): Solid mixture

Frequency and duration of use:
- Exposure duration: < 8 h
Other operational conditions affecting workers exposure

- **Outdoor / Indoor**: Indoor
- **Remarks**: > melting point

Technical conditions and measures

- Provide a basic standard of general ventilation (1 to 3 air changes per hour).
- Local exhaust ventilation - efficiency of at least (Effectiveness of a measure): 90 %

Conditions and measures related to personal protection, hygiene and health evaluation

- Wear suitable gloves tested to EN374.
- Use suitable eye protection.
5.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC4 Local PEC</td>
<td>Fresh water</td>
<td>0.4 mg/l</td>
<td></td>
<td>0.444</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.33 mg/kg (dw)</td>
<td></td>
<td>0.946</td>
</tr>
<tr>
<td>STP</td>
<td>0 mg/l</td>
<td></td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.006 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Regional PEC Fresh water</td>
<td>0.004 mg/l</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.383 mg/l</td>
<td></td>
<td>0.426</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.193 mg/kg (dw)</td>
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<td>0.907</td>
</tr>
<tr>
<td>STP</td>
<td>3.479 mg/l</td>
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<td>0.088</td>
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<td></td>
<td>Fresh water sediment</td>
<td>0.26 mg/kg (dw)</td>
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<td>0.024</td>
</tr>
<tr>
<td></td>
<td>Regional PEC Fresh water</td>
<td>0.004 mg/l</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC22</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.1 mg/m³</td>
<td>0.032</td>
<td></td>
</tr>
<tr>
<td>PROC22</td>
<td>Worker - inhalative, short-term - local</td>
<td>0.4 mg/m³</td>
<td>0.078</td>
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</tr>
<tr>
<td>PROC25</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.5 mg/m³</td>
<td>0.161</td>
<td></td>
</tr>
<tr>
<td>PROC25</td>
<td>Worker - inhalative, short-term - local</td>
<td>2 mg/m³</td>
<td>0.392</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC4 Exposure Assessment Method: Used EUSES model.
5.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

5.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES. The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

5.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
6. ES6 : Non-metal-surface treatment products

6.1. Scenario description

Main User Groups : SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Environmental release category : ERC6b Industrial use of reactive processing aids
Process category : PROC7 Industrial spraying
PROC13 Treatment of articles by dipping and pouring
Product category : PC15 Non-metal-surface treatment products

6.2. Conditions of use affecting exposure

6.2.1 Contributing scenario controlling environmental exposure for: ERC6b Industrial use of reactive processing aids

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximum daily site tonnage (kg/day): 55 kg
Maximal annual amount used: 20 t
Local daily emission to waste water: 2.75 kg
Maximum daily local emission to air: 0.055 kg
Local daily emission to soil: 13.75 g

Environmental factors
Flow rate: 18,000 m3/d

Other given operational conditions affecting environmental exposure
Number of emission days per year: 365

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Onsite STP
Flow rate of sewage treatment plant effluent: 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Neutralisation of the effluents before releases should be considered.

6.2.2 Contributing scenario controlling worker exposure for: PROC7 Industrial spraying

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 40%
Physical Form (at time of use): liquid

Frequency and duration of use
Exposure duration (far field) : 240 min

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room size</td>
<td>300 m3</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
<td>1</td>
</tr>
<tr>
<td>Remarks</td>
<td>Assumes activities are at ambient temperature (unless stated differently).</td>
</tr>
</tbody>
</table>

**Technical conditions and measures**

with local exhaust ventilation

**Conditions and measures related to personal protection, hygiene and health evaluation**

Use a full face respirator conforming to EN136 with Type A/P2 filter or better., Use suitable eye protection., Wear suitable gloves tested to EN374.

**6.2.3 Contributing scenario controlling worker exposure for: PROC13 Treatment of articles by dipping and pouring**

**Product characteristics**

- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 40%
- Physical Form (at time of use): liquid

**Frequency and duration of use**

Exposure duration (near field) : 240 min

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room size</td>
<td>300 m3</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
<td>1</td>
</tr>
<tr>
<td>Remarks</td>
<td>Assumes activities are at ambient temperature (unless stated differently).</td>
</tr>
</tbody>
</table>

**Technical conditions and measures**

with local exhaust ventilation

**Conditions and measures related to personal protection, hygiene and health evaluation**

Use suitable eye protection., Wear suitable gloves tested to EN374.
6.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6b</td>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.141 mg/l</td>
<td>0.157</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>1.176 mg/kg (dw)</td>
<td>0.334</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STP</td>
<td>0 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.75 mg/m³</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>PROC13</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.0046 mg/m³</td>
<td>0.0015</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.018 mg/m³</td>
<td>0.0036</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

| ERC6b | Exposure Assessment Method : Used EUSES model. |
|PROC7  | Exposure Assessment Method : ART 1.0         |
|PROC13 |                                              |

6.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

6.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

6.4.2 Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational
Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
7. ES7: Metal surface treatment products, including galvanic and electroplating products

7.1. Scenario description

Main User Groups : SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Environmental release category : ERC6b Industrial use of reactive processing aids
Process category : PROC7 Industrial spraying
PROC13 Treatment of articles by dipping and pouring
Product category : PC14 Metal surface treatment products, including galvanic and electroplating products

7.2. Conditions of use affecting exposure

7.2.1 Contributing scenario controlling environmental exposure for: ERC6b Industrial use of reactive processing aids, Onsite STP

Amount
Maximal annual amount used : 30 t
Maximum daily site tonnage (kg/day): : 300 kg
Local daily emission to waste water : 15 kg
Maximum daily local emission to air : 0.3 kg
Local daily emission to soil : 0.075 kg

Environmental factors
Flow rate : 18,000 m³/d
Dilution Factor (River) : 20

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m³/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

7.2.2 Contributing scenario controlling environmental exposure for: ERC6b Industrial use of reactive processing aids, Municipal STP

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximal annual amount used : 50 t
Maximum daily site tonnage (kg/day): : 150 kg
Environmental factors
Flow rate : 18,000 m³/d

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP
Flow rate of sewage treatment plant effluent : 2,000 m³/d

7.2.3 Contributing scenario controlling worker exposure for: PROC7 Industrial spraying

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 40%
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (far field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m³
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures
with local exhaust ventilation

Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136 with Type A/P2 filter or better., Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable working clothes.

7.2.4 Contributing scenario controlling worker exposure for: PROC13 Treatment of articles by dipping and pouring

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 40%
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m³
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures
with local exhaust ventilation

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable working clothes.
### 7.3. Exposure estimation and reference to its source

#### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6b Local PEC</td>
<td>Fresh water</td>
<td>0.4 mg/l</td>
<td>0.444 Onsite STP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.33 mg/kg (dw)</td>
<td>0.946 Onsite STP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>0 mg/l</td>
<td>&lt; 0.01 Onsite STP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01 Onsite STP</td>
<td></td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.408 mg/l</td>
<td>0.453 Municipal STP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.4 mg/kg (dw)</td>
<td>0.966 Municipal STP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>3.728 mg/l</td>
<td>0.073 Municipal STP</td>
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<tr>
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<td>Agricultural soil</td>
<td>0.27 mg/kg (dw)</td>
<td>0.025 Municipal STP</td>
<td></td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>

#### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.75 mg/m³</td>
<td>0.24</td>
<td></td>
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<tr>
<td>PROC7</td>
<td>Inhalation - Acute - local effects</td>
<td>3 mg/m³</td>
<td>0.59</td>
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</tr>
<tr>
<td>PROC13</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.0046 mg/m³</td>
<td>0.0015</td>
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</tr>
<tr>
<td>PROC13</td>
<td>Inhalation - Acute - local effects</td>
<td>0.0018 mg/m³</td>
<td>0.0036</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC6b Exposure Assessment Method : Used EUSES model.

PROC7 Exposure Assessment Method : ART 1.0
7.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

7.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

7.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
8. ES8 : Production of optical glass

8.1. Scenario description

| Main User Groups | SU 3 | Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Environmental release category | ERC5 | Industrial use resulting in inclusion into or onto a matrix |
| Process category | PROC23 | Open processing and transfer operations with minerals/ metals at elevated temperature |
| Product category | ceramic | Specialised optical glass. |

8.2. Conditions of use affecting exposure

8.2.1 Contributing scenario controlling environmental exposure for: ERC5 Industrial use resulting in inclusion into or onto a matrix. Onsite STP

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
- Maximal annual amount used: 50 t
- Maximum daily site tonnage (kg/day): 500 kg
- Local daily emission to waste water: 15.55 kg
- Maximum daily local emission to air: 11 kg
- Local daily emission to soil: 5 kg

Environmental factors
- Flow rate: 18,000 m3/d
- Dilution Factor (River): 20

Other given operational conditions affecting environmental exposure
- Number of emission days per year: 100

Conditions and measures related to sewage treatment plant
- Type of Sewage Treatment Plant: Onsite STP
- Flow rate of sewage treatment plant effluent: 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
- Waste treatment: Neutralisation of the effluents before releases should be considered.

8.2.2 Contributing scenario controlling environmental exposure for: ERC5 Industrial use resulting in inclusion into or onto a matrix. Municipal STP

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Maximum daily site tonnage (kg/day): 15 kg
Maximal annual amount used: 3 t

Environmental factors
Flow rate: 18,000 m³/d

Other given operational conditions affecting environmental exposure
Number of emission days per year: 100

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP
Flow rate of sewage treatment plant effluent: 2,000 m³/d

8.2.3 Contributing scenario controlling worker exposure for: PROC23 Open processing and transfer operations with minerals/metal at elevated temperature

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100% (unless stated differently).
Physical Form (at time of use): Solid mixture

Frequency and duration of use
Exposure duration: < 8 h

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Remarks: > melting point

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear a respirator conforming to EN141 with Type A/P2 filter or better.
Use suitable eye protection.
### 8.3. Exposure estimation and reference to its source

#### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC5 Local PEC</td>
<td>Fresh water</td>
<td>0.4 mg/l</td>
<td></td>
<td>0.444</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.33 mg/kg (dw)</td>
<td></td>
<td>0.946</td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>0 mg/l</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.006 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>ERC5 Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>ERC5 Local PEC</td>
<td>Fresh water</td>
<td>0.408 mg/l</td>
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<td>0.453</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>3.4 mg/kg (dw)</td>
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<td>0.966</td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>3.728 mg/l</td>
<td></td>
<td>0.073</td>
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<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.274 mg/kg (dw)</td>
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<td>0.025</td>
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<tr>
<td>ERC5 Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

#### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC23</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.1 mg/m³</td>
<td>0.032</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>0.4 mg/m³</td>
<td>0.078</td>
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</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC5 Exposure Assessment Method : Used EUSES model.

PROC23 Exposure Assessment Method : Used ECETOC TRA model.
8.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

8.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

8.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
9. ES9 : Use as wood preservative in industrial environment

9.1. Scenario description

Main User Groups : SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use : SU6a Manufacture of wood and wood products
Environmental release category : ERC6b Industrial use of reactive processing aids
Process category : PROC13 Treatment of articles by dipping and pouring

9.2. Conditions of use affecting exposure

9.2.1 Contributing scenario controlling environmental exposure for: ERC6b Industrial use of reactive processing aids

Amount
Maximal annual amount used : 10 t
Maximum daily site tonnage (kg/day): 27 kg
Local daily emission to waste water : 1.37 kg
Maximum daily local emission to air : 0.027 kg
Local daily emission to soil : 6.75 g

Environmental factors
Flow rate : 18,000 m3/d

Other given operational conditions affecting environmental exposure

Number of emission days per year : 365

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Onsite STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Neutralisation of the effluents before releases should be considered.

9.2.2 Contributing scenario controlling worker exposure for: PROC13 Treatment of articles by dipping and pouring, OC8 Indoor

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 20%
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m3
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures with local exhaust ventilation

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection., Wear suitable gloves tested to EN374., Wear suitable working clothes.

9.2.3 Contributing scenario controlling worker exposure for: PROC13 Treatment of articles by dipping and pouring, OC3 Outdoor

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 40%
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Outdoor
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection., Wear suitable working clothes., Wear suitable gloves tested to EN374.
9.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartments</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6b Local PEC</td>
<td></td>
<td>Fresh water</td>
<td>0.072 mg/l</td>
<td>0.08</td>
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<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.601 mg/kg (dw)</td>
<td>0.171</td>
</tr>
<tr>
<td>STP</td>
<td></td>
<td>Fresh water sediment</td>
<td>0 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Agricultural soil</td>
<td></td>
<td>Fresh water</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Regional PEC</td>
<td></td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Marine water</td>
<td></td>
<td></td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td></td>
<td></td>
<td>0.003 mg/kg (dw)</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Agricultural soil</td>
<td></td>
<td></td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC13</td>
<td>Indoor</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.0023 mg/m³</td>
<td>0.00074</td>
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<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.0093 mg/m³</td>
<td>0.0018</td>
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<tr>
<td>PROC13</td>
<td>Outdoor</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.0059 mg/m³</td>
<td>0.0019</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.024 mg/m³</td>
<td>0.0046</td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC6b Exposure Assessment Method : Used EUSES model.
PROC13 Exposure Assessment Method : ART 1.0

9.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

9.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

9.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
10. ES10 : Professional use as soldering/brazing material, Indoor

10.1. Scenario description

Main User Groups : SU 22  Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category : ERC8b  Wide dispersive indoor use of reactive substances in open systems
Process category : PROC10  Roller application or brushing
                  PROC13  Treatment of articles by dipping and pouring
                  PROC25  Other hot work operations with metals
Product category : PC38  Welding and soldering products (with flux coatings or flux cores.), flux products

10.2. Conditions of use affecting exposure

10.2.1 Contributing scenario controlling environmental exposure for: ERC8b Wide dispersive indoor use of reactive substances in open systems

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount
Local daily emission to waste water : 0.33 g
Maximum daily local emission to air : 0.0165 g
Local daily emission to soil : 0 kg
Daily amount for wide disperse uses : 16.5 g

Environmental factors
Flow rate : 18,000 m3/d

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 0.6 %

10.2.2 Contributing scenario controlling worker exposure for: PROC10 Roller application or brushing, PROC13 Treatment of articles by dipping and pouring

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 35 %
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m³
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable working clothes., Use suitable eye protection., Wear suitable gloves tested to EN374.

10.2.3 Contributing scenario controlling worker exposure for: PROC25 Other hot work operations with metals

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid mixture

Frequency and duration of use
Exposure duration : < 8 h

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : > melting point

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear a respirator conforming to EN141 with Type A/P2 filter or better., Use suitable eye protection., Wear suitable gloves tested to EN374.
10.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8b Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.03 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>STP</td>
<td>&lt; 0.001 mg/l</td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regional PEC Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Marine water</td>
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<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Marine sediment</td>
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<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td>&lt; 0.01</td>
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<tr>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC10</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.8 mg/m³</td>
<td>0.26</td>
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<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>3.2 mg/m³</td>
<td>0.63</td>
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<tr>
<td>PROC13</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.008 mg/m³</td>
<td>0.0026</td>
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<tr>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.032 mg/m³</td>
<td>0.0063</td>
<td></td>
</tr>
<tr>
<td>PROC25</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>1 mg/m³</td>
<td>0.323</td>
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<tr>
<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>4 mg/m³</td>
<td>0.784</td>
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</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC8b Exposure Assessment Method : Used EUSES model.
PROC10 Exposure Assessment Method : ART 1.0
PROC13 Exposure Assessment Method : ART 1.0
PROC25 Exposure Assessment Method : ECETOC TRA v3.0 worker

10.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

10.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES. The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either
alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**10.4.2 Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
11. ES11 : Professional use as soldering/brazing material, Outdoor

11.1. Scenario description

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22</th>
<th>Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sectors of end-use</td>
<td>SU17</td>
<td>General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC8e</td>
<td>Wide dispersive outdoor use of reactive substances in open systems</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC10</td>
<td>Roller application or brushing</td>
</tr>
<tr>
<td></td>
<td>PROC13</td>
<td>Treatment of articles by dipping and pouring</td>
</tr>
<tr>
<td></td>
<td>PROC25</td>
<td>Other hot work operations with metals</td>
</tr>
<tr>
<td>Product category</td>
<td>PC38</td>
<td>Welding and soldering products (with flux coatings or flux cores.), flux products</td>
</tr>
</tbody>
</table>

11.2. Conditions of use affecting exposure

11.2.1 Contributing scenario controlling environmental exposure for: ERC8e Wide dispersive outdoor use of reactive substances in open systems

### Product characteristics

**Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Amount**

- Local daily emission to waste water: 0.33 g
- Maximum daily local emission to air: 0.0165 g
- Local daily emission to soil: 0 g
- Daily amount for wide disperse uses: 16.5 g

**Environmental factors**

- Flow rate: 18,000 m3/d

**Conditions and measures related to sewage treatment plant**

- Type of Sewage Treatment Plant: Municipal STP
- Flow rate of sewage treatment plant effluent: 2,000 m3/d
- Effectiveness (of a measure): 0.6 %

11.2.2 Contributing scenario controlling worker exposure for: PROC10 Roller application or brushing, PROC13 Treatment of articles by dipping and pouring

### Product characteristics

**Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 35 %

**Physical Form (at time of use)**: liquid

**Frequency and duration of use**

- Exposure duration (near field): 240 min
Other operational conditions affecting workers exposure
Outdoor / Indoor : Outdoor
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable working clothes., Use suitable eye protection., Wear suitable gloves tested to EN374.

11.2.3 Contributing scenario controlling worker exposure for: PROC25 Other hot work operations with metals

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid mixture

Frequency and duration of use
Exposure duration : < 8 h

Other operational conditions affecting workers exposure
Outdoor / Indoor : Outdoor
Remarks : > melting point

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear a respirator conforming to EN141 with Type A/P2 filter or better., Use suitable eye protection.
11.3. Exposure estimation and reference to its source

### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8e</td>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water</td>
<td>0.03 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sediment</td>
<td>&lt; 0.001 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>STP</td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>sediment</td>
<td>Fresh water</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC10</td>
<td></td>
<td>Inhalation - Long-term - systemic effects</td>
<td>1 mg/m³</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>4 mg/m³</td>
<td>0.78</td>
</tr>
<tr>
<td>PROC13</td>
<td></td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.011 mg/m³</td>
<td>0.0036</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.0044 mg/m³</td>
<td>0.0086</td>
</tr>
<tr>
<td>PROC25</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.7 mg/m³</td>
<td>0.226</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, short-term - local</td>
<td>2.8 mg/m³</td>
<td>0.549</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC8e Exposure Assessment Method : Used EUSES model.
PROC10 Exposure Assessment Method : ART 1.0
PROC13 Exposure Assessment Method : ART 1.0
PROC25 Exposure Assessment Method : ECETOC TRA v3.0 worker

11.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

11.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either
alone or in combination. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

11.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
12. ES12 : Use as wood preservative for professional use, Indoor

12.1. Scenario description

Main User Groups : SU 22  Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use : SU6a  Manufacture of wood and wood products
Environmental release category : ERC8b  Wide dispersive indoor use of reactive substances in open systems
Process category : PROC11  Non industrial spraying

12.2. Conditions of use affecting exposure

12.2.1 Contributing scenario controlling environmental exposure for: ERC8b Wide dispersive indoor use of reactive substances in open systems

<table>
<thead>
<tr>
<th>Amount</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local daily emission to waste water</td>
<td>0.055 g</td>
</tr>
<tr>
<td>Maximum daily local emission to air</td>
<td>0.00275 g</td>
</tr>
<tr>
<td>Local daily emission to soil</td>
<td>0 g</td>
</tr>
<tr>
<td>Daily amount for wide disperse uses</td>
<td>2.75 g</td>
</tr>
</tbody>
</table>

Environmental factors

Flow rate : 18,000 m3/d

Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant : Municipal STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 0.6 %

12.2.2 Contributing scenario controlling worker exposure for: PROC11 Non industrial spraying , OC8 Indoor

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : 300 m3
Ventilation rate per hour : 1
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear a full face respirator conforming to EN136 with Type A/P2 filter or better., Wear suitable working clothes., Use suitable eye protection., Wear suitable gloves tested to EN374.
12.3. Exposure estimation and reference to its source

### Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8b Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Local PEC</td>
<td>Fresh water sediment</td>
<td>0.03 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Local PEC</td>
<td>STP</td>
<td>&lt; 0.001 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Local PEC</td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Regional PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Regional PEC</td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8b Regional PEC</td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b Regional PEC</td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

### Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC11 Indoor</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.17 mg/m³</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>PROC11 Indoor</td>
<td>Inhalation - Acute - local effects</td>
<td>0.68 mg/m³</td>
<td>0.133</td>
<td></td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC8b Exposure Assessment Method : Used EUSES model.
PROC11 Exposure Assessment Method : ART 1.0

12.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

12.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

12.4.2 Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
13. ES13 : Use as wood preservative for professional use, Outdoor

13.1. Scenario description

Main User Groups : SU 22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use : SU6a Manufacture of wood and wood products
Environmental release category : ERC8e Wide dispersive outdoor use of reactive substances in open systems
Process category : PROC11 Non industrial spraying

13.2. Conditions of use affecting exposure

13.2.1 Contributing scenario controlling environmental exposure for: ERC8e Wide dispersive outdoor use of reactive substances in open systems

Amount
Local daily emission to waste water : 0.055 g
Maximum daily local emission to air : 0.00275 g
Local daily emission to soil : 0 g
Daily amount for wide disperse uses : 2.75 g

Environmental factors
Flow rate : 18,000 m3/d

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 0.6 %

13.2.2 Contributing scenario controlling worker exposure for: PROC11 Non industrial spraying, OC9 Outdoor

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration (near field) : 240 min

Other operational conditions affecting workers exposure
Outdoor / Indoor : Outdoor
Remarks : Assumes activities are at ambient temperature (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136 with Type A/P2 filter or better., Wear suitable working clothes., Use suitable eye protection., Wear suitable gloves tested to EN374.
13.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8e</td>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.03 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STP</td>
<td>&lt; 0.001 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regional PEC Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.003 mg/kg (dw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC11</td>
<td>Outdoor</td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.225 mg/m³</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>0.9 mg/m³</td>
<td>0.18</td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC8e Exposure Assessment Method : Used EUSES model.
PROC11 Exposure Assessment Method : ART 1.0

13.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

13.4.1 Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES. The main driving parameters are:
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

13.4.2 Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
14. ES14 : Laboratory professional use

14.1. Scenario description

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22</th>
<th>Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental release category</td>
<td>ERC8b</td>
<td>Wide dispersive indoor use of reactive substances in open systems</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC15</td>
<td>Use as laboratory reagent</td>
</tr>
<tr>
<td>Product category</td>
<td>PC21</td>
<td>Laboratory chemicals</td>
</tr>
</tbody>
</table>

14.2. Conditions of use affecting exposure

14.2.1 Contributing scenario controlling environmental exposure for: ERC8b Wide dispersive indoor use of reactive substances in open systems

**Amount**
- Local daily emission to waste water: 0.022 g
- Maximum daily local emission to air: 0.0011 g
- Local daily emission to soil: 0 g
- Daily amount for wide disperse uses: 1.1 g

**Environmental factors**
- Flow rate: 18,000 m³/d

**Conditions and measures related to sewage treatment plant**
- Type of Sewage Treatment Plant: Municipal STP
- Flow rate of sewage treatment plant: 2,000 m³/d
- Effectiveness (of a measure): 0.6%

14.2.2 Contributing scenario controlling worker exposure for: PROC15 Use as laboratory reagent

**Product characteristics**
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
- Physical Form (at time of use): Dustiness: High

**Frequency and duration of use**
- Exposure duration: < 4 h

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Remarks: Covers use at ambient temperatures.

**Technical conditions and measures**
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).
- Local exhaust ventilation - efficiency of at least (Effectiveness (of a measure): 80 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**
Use suitable eye protection., Wear suitable gloves tested to EN374.

14.3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Release factor</th>
<th>Value type</th>
<th>Compartment</th>
<th>Environmental exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8b</td>
<td>Local PEC</td>
<td>Fresh water</td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.03 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>STP</td>
<td></td>
<td>Agricultural soil</td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Regional PEC</td>
<td>Fresh water</td>
<td></td>
<td>0.004 mg/l</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.029 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0004 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>0.003 mg/kg (dw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td></td>
<td>&lt; 0.0001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural soil</td>
<td></td>
<td>0.003 mg/kg (dw)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Human Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC15</td>
<td></td>
<td>Inhalation - Long-term - systemic effects</td>
<td>0.6 mg/m³</td>
<td>0.194</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalation - Acute - local effects</td>
<td>4 mg/m³</td>
<td>0.784</td>
</tr>
</tbody>
</table>

RCR = Risk characterisation ratio

ERC8b Exposure Assessment Method : Used EUSES model.
PROC15 Exposure Assessment Method : Used ECETOC TRA model.

14.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

14.4.1 Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor, Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

14.4.2 Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.