



SAFETY DATA SHEET

POTASSIUM BIFLUORIDE

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Compilation date: 29/11/2010

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Revision No: 4.1

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

1.1. Product identifier

Product name: POTASSIUM BIFLUORIDE

REACH registered number(s): 01-2119960644-32-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

Use of substance / mixture: Alkylation catalyst. Fluorine production electrolyte. Glass frosting agent. Welding and soldering agents. Chemical intermediate. Metal treatment.

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...]

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Signal words: Danger

Hazard pictograms: GHS05: Corrosion

GHS06: Skull and crossbones



Precautionary statements: P260: Do not breathe dust/fumes/gas/mist/vapours/spray.
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.

[cont...]

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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.

[cont...]

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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

Workplace exposure limits:

Respirable dust

| State | 8 hour TWA | 15 min. STEL | 8 hour TWA | 15 min. STEL |
|-------|-----------------------|--------------|------------|--------------|
| UK | 2.5 mg/m ³ | - | - | - |

DNEL/PNEC Values

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| Type | Exposure | Value | Population | Effect |
|------|------------------------------------|----------------------|------------|----------|
| DNEL | Inhalation (repeated dose) | 3.1mg/m ³ | Workers | Systemic |
| DNEL | Inhalation | 5.1mg/m ³ | Workers | Local |
| DNEL | Oral | 0.24mg/kg | Consumers | Systemic |
| PNEC | Fresh water | 0.9mg/l | - | - |
| PNEC | Fresh water sediments | 0.766mg/kg | - | - |
| PNEC | Marine water | 0.9mg/l | - | - |
| PNEC | Microorganisms in sewage treatment | 51mg/l | - | - |
| PNEC | Soil (agricultural) | 11mg/kg | - | - |

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.

Hand protection: Protective gloves. PVC gloves. Neoprene gloves.

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.

[cont...]

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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.

upper: No data available.

Flash point °C: No data available.

Part.coeff. n-octanol/water: No data available.

Autoflammability °C: >400

Vapour pressure: No data available.

Relative density: 2.37

pH: 1

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...]

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Toxicity values:

| Route | Species | Test | Value | Units |
|-------|---------|------|--------|-------|
| ORL | RAT | LD50 | 52-250 | mg/kg |

Relevant hazards for substance:

| Hazard | Route | Basis |
|-------------------------------|-------|-----------------------|
| Acute toxicity (ac. tox. 3) | ING | Hazardous: calculated |
| Skin corrosion/irritation | DRM | Hazardous: calculated |
| Serious eye damage/irritation | OPT | Hazardous: calculated |

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:

| Species | Test | Value | Units |
|---------------|-----------|-------|-------|
| Daphnia magna | 48H EC50 | 48 | mg/l |
| FISH | 96H LC50 | 51 | mg/l |
| ALGAE | 96H ErC50 | 43 | mg/l |

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.

[cont...]

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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 HYDROGENDIFLUORIDE, 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.

Section 16: Other information

[cont...]

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Other information

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.

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Annex

Scenario List

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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

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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.

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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 |

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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 , OC9 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.

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9.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC6b | Local PEC | Fresh water | 0.072 mg/l | 0.08 |
| | | Fresh water sediment | 0.601 mg/kg (dw) | 0.171 |
| | | STP | 0 mg/l | < 0.01 |
| Regional PEC | Local PEC | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| | | Fresh water | 0.004 mg/l | < 0.01 |
| | Regional PEC | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | Regional PEC | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|--------------------------|---------|
| PROC13 | Indoor | Inhalation - Long-term - systemic effects | 0.0023 mg/m ³ | 0.00074 |
| | | Inhalation - Acute - local effects | 0.0093 mg/m ³ | 0.0018 |
| | Outdoor | Inhalation - Long-term - systemic effects | 0.0059 mg/m ³ | 0.0019 |
| | | Inhalation - Acute - local effects | 0.024 mg/m ³ | 0.0046 |

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., Where other Risk Management Measures/Operational

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Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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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 PROC13 PROC25 | Roller application or brushing Treatment of articles by dipping and pouring 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

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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.

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10.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC8b | Local PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.03 mg/kg (dw) | < 0.01 |
| | | STP | < 0.001 mg/l | < 0.01 |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| | Regional PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|-------------------------|--------|
| PROC10 | | Inhalation - Long-term - systemic effects | 0.8 mg/m ³ | 0.26 |
| PROC13 | | Inhalation - Acute - local effects | 3.2 mg/m ³ | 0.63 |
| | | Inhalation - Long-term - systemic effects | 0.008 mg/m ³ | 0.0026 |
| PROC25 | | Inhalation - Acute - local effects | 0.032 mg/m ³ | 0.0063 |
| | | Worker - inhalative, long-term - systemic | 1 mg/m ³ | 0.323 |
| | | Worker - inhalative, short-term - local | 4 mg/m ³ | 0.784 |

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

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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.

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11. ES11 : Professional use as soldering/brazing material, Outdoor

11.1. Scenario description

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

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

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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.

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11.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC8e | Local PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.03 mg/kg (dw) | < 0.01 |
| | | STP | < 0.001 mg/l | < 0.01 |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| Regional PEC | Regional PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|--------------------------|--------|
| PROC10 | | Inhalation - Long-term - systemic effects | 1 mg/m ³ | 0.32 |
| PROC13 | | Inhalation - Acute - local effects | 4 mg/m ³ | 0.78 |
| | | Inhalation - Long-term - systemic effects | 0.011 mg/m ³ | 0.0036 |
| PROC25 | | Inhalation - Acute - local effects | 0.0044 mg/m ³ | 0.0086 |
| | | Worker - inhalative, long-term - systemic | 0.7 mg/m ³ | 0.226 |
| | | Worker - inhalative, short-term - local | 2.8 mg/m ³ | 0.549 |

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

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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.

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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

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 % |

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.

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12.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC8b | Local PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.03 mg/kg (dw) | < 0.01 |
| | | STP | < 0.001 mg/l | < 0.01 |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| | Regional PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|------------------------|-------|
| PROC11 | Indoor | Inhalation - Long-term - systemic effects | 0.17 mg/m ³ | 0.05 |
| | | Inhalation - Acute - local effects | 0.68 mg/m ³ | 0.133 |

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.

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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.

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13.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC8e | Local PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.03 mg/kg (dw) | < 0.01 |
| | | STP | < 0.001 mg/l | < 0.01 |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| Regional PEC | Regional PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|-------------------------|-------|
| PROC11 | Outdoor | Inhalation - Long-term - systemic effects | 0.225 mg/m ³ | 0.073 |
| | | Inhalation - Acute - local effects | 0.9 mg/m ³ | 0.18 |

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.

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14. ES14 : Laboratory professional use

14.1. 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 | : | PROC15 | Use as laboratory reagent |
| Product category | : | PC21 | Laboratory chemicals |

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 effluent | : | 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

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Use suitable eye protection., Wear suitable gloves tested to EN374.

14.3. Exposure estimation and reference to its source

Environment

| Release factor | Value type | Compartment | Environmental exposure | RCR |
|----------------|--------------|----------------------|----------------------------|--------|
| ERC8b | Local PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.03 mg/kg (dw) | < 0.01 |
| | | STP | < 0.001 mg/l | < 0.01 |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |
| | Regional PEC | Fresh water | 0.004 mg/l | < 0.01 |
| | | Fresh water sediment | 0.029 mg/kg (dw) | < 0.01 |
| | | Marine water | < 0.0004 mg/l | |
| | | Marine sediment | 0.003 mg/kg (dw) | |
| | | Air | < 0.0001 mg/m ³ | |
| | | Agricultural soil | 0.003 mg/kg (dw) | < 0.01 |

Human Health

| Contributing Scenario | Specific conditions | Value type | Level of Exposure | RCR |
|-----------------------|---------------------|---|-----------------------|-------|
| PROC15 | | Inhalation - Long-term - systemic effects | 0.6 mg/m ³ | 0.194 |
| | | Inhalation - Acute - local effects | 4 mg/m ³ | 0.784 |

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.

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