



# SAFETY DATA SHEET

BLUE CUBE GERMANY ASSETS  
GMBH & CO. KG

Safety Data Sheet according to Reg. (EU) No 2015/830

**Product name:** METHYLENE CHLORIDE, TECHNICAL - E

**Revision Date:** 10.05.2016

**Version:** 11.1

**Print Date:** 12.03.2018

BLUE CUBE GERMANY ASSETS GMBH & CO. KG encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

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### 1.1 Product identifier

**Product name:** METHYLENE CHLORIDE, TECHNICAL - E

**Chemical name of the substance:** Dichloromethane

**CASRN:** 75-09-2

**EC-No.:** 200-838-9

**REACH Registration Number:** 01-2119480404-41-0001

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

**Identified uses:** Manufacture of substance, industrial. Use as an intermediate, industrial. Formulation & (re)packing of substances and mixtures, industrial. Use as a process solvent. Uses in Coatings, industrial. Uses in Coatings, consumer. Blowing agents, industrial. Functional Fluids, industrial. Uses in Coatings, professional. Use in Cleaning Agents, professional. Formulating, Repackaging & Distribution. professional use Use in laboratories, professional. Industrial use.

### 1.3 Details of the supplier of the safety data sheet

#### COMPANY IDENTIFICATION

BLUE CUBE GERMANY ASSETS

GMBH & CO. KG

BUETZFLEETHER SAND 2

21683 STADE

GERMANY

**Customer Information Number:**

+49 4141 7693000

INFO@OLINBC.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +32 3 575 55 55

**Local Emergency Contact:** +32 3 575 55 55

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## SECTION 2. HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008:**

Skin irritation - Category 2 - H315

Eye irritation - Category 2 - H319

Carcinogenicity - Category 2 - H351

Specific target organ toxicity - single exposure - Category 3 - H336

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

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008:****Hazard pictograms****Signal word: WARNING****Hazard statements**

H315 Causes skin irritation.  
 H319 Causes serious eye irritation.  
 H336 May cause drowsiness or dizziness.  
 H351 Suspected of causing cancer.

**Precautionary statements**

P201 Obtain special instructions before use.  
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a  
 + P312 POISON CENTER/doctor if you feel unwell.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P337 + P313 If eye irritation persists: Get medical advice/ attention.

**2.3 Other hazards**

Toxic fumes may be released in fire situations.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substance**

This product is a substance.

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
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<b>CASRN</b> 75-09-2 <b>EC-No.</b> 200-838-9 <b>Index-No.</b> 602-004-00-3	01-2119480404-41	99.9%	methylene chloride	Skin Irrit. - 2 - H315 Eye Irrit. - 2 - H319 Carc. - 2 - H351 STOT SE - 3 - H336
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For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4. FIRST AID MEASURES

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### 4.1 Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Wash off with plenty of water.

**Eye contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

**4.2 Most important symptoms and effects, both acute and delayed:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. Treat with 100% oxygen. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. Because rapid absorption may occur through the lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Carboxyhemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemia. Skin contact may aggravate preexisting dermatitis.

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## SECTION 5. FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Unsuitable extinguishing media:** No data available

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

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Hydrogen chloride. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Phosgene. Chlorine.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. Although this material does not have a flash point, it can burn at room temperature. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep personnel out of confined or poorly ventilated areas. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Confined space entry procedures must be followed before entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**6.2 Environmental precautions:** Material will sink in water. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

**6.4 Reference to other sections:** References to other sections, if applicable, have been provided in the previous sub-sections.

## SECTION 7. HANDLING AND STORAGE

**7.1 Precautions for safe handling:** Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Do not enter confined spaces unless adequately ventilated. To avoid uncontrolled emissions, vent vapor from container to storage tank. Vapors of this product are heavier than air and lethal concentrations of vapors can collect in low, confined and unventilated spaces such as tanks, pits, small rooms and even in equipment (degreasers) that is used for degreasing metal parts. Do not enter these confined spaces where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**7.2 Conditions for safe storage, including any incompatibilities:** Store under cover in a dry, clean, cool, well ventilated place away from sunlight. Do not handle or store near an open flame, heat, or sources of ignition. Keep container tightly closed when not in use. Do not store in: Zinc. Aluminum. Aluminum alloys. Plastic.

**7.3 Specific end use(s):** See the technical data sheet on this product for further information.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
methylene chloride	ACGIH	TWA	50 ppm
	ACGIH	TWA	BEI
	GB EH40	TWA	350 mg/m3 100 ppm
	GB EH40	TWA	Absorbed via skin
	GB EH40	STEL	1,060 mg/m3 300 ppm
	GB EH40	STEL	Absorbed via skin

### Derived No Effect Level Workers

<i>Acute - systemic effects</i>		<i>Acute – local effects</i>		<i>Long-term – systemic effects</i>		<i>Long-term – local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	706 mg/m3	n.a.	n.a.	4750 mg/kg bw/day	353 mg/m3	n.a.	n.a.

### Consumers

<i>Acute - systemic effects</i>			<i>Acute – local effects</i>		<i>Long-term – systemic effects</i>			<i>Long-term – local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	353 mg/m3	n.a.	n.a.	n.a.	2395 mg/kg bw/day	n.a.	n.a.	88.3 mg/m3	n.a.

**Predicted No Effect Concentration**

Compartment	PNEC	Remarks
Fresh water	0.54 mg/l	
Marine water	0.194 mg/l	
Intermittent releases	0.27 mg/l	
Fresh water sediment	4.47 mg/kg d.w.	
Marine sediment	1.61 mg/kg d.w.	
Soil	0.583 mg/kg d.w.	
STP	26 mg/l	

**8.2 Exposure controls**

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

**Individual protection measures**

**Eye/face protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator.

**Skin protection**

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Viton. Polyvinyl alcohol ("PVA"). Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. **NOTICE:** The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. For emergency response or for situations where the atmospheric level is unknown, use an approved positive-

pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical state	Liquid.
Color	Clear
Odor	Characteristic
Odor Threshold	250 ppm <i>Literature</i>
pH	Not applicable
Melting point/range	-95 °C <i>Literature</i>
Freezing point	-95 °C <i>Literature</i>
Boiling point (760 mmHg)	40 °C <i>Literature</i>
Flash point	<b>closed cup</b> <i>Tag Closed Cup ASTM D56</i> None
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Lower explosion limit	14 % vol <i>Literature</i>
Upper explosion limit	22 % vol <i>Literature</i>
Vapor Pressure	58.4 kPa at 25 °C <i>Literature</i>
Relative Vapor Density (air = 1)	2.93 <i>Literature</i>
Relative Density (water = 1)	1.32 at 25 °C <i>Literature</i>
Water solubility	13200 mg/l at 25 °C <i>Literature</i>
Partition coefficient: n-octanol/water	log Pow: 1.25 <i>Measured</i>
Auto-ignition temperature	605 °C at 101.3 kPa <i>Literature</i>
Decomposition temperature	No test data available
Dynamic Viscosity	0.420 mPa.s at 25 °C <i>Literature</i>
Kinematic Viscosity	0.31 mm <sup>2</sup> /s at 25 °C <i>Calculated.</i>
Explosive properties	Not explosive
Oxidizing properties	No data available

### 9.2 Other information

Molecular weight	No data available
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NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10. STABILITY AND REACTIVITY

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**10.1 Reactivity:** No data available

**10.2 Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

**10.3 Possibility of hazardous reactions:** Polymerization will not occur.

**10.4 Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition. Avoid direct sunlight or ultraviolet sources.

**10.5 Incompatible materials:** Avoid contact with oxidizing materials. Avoid contact with: Strong bases. Water contamination may cause corrosion of metals due to formation of hydrochloric acid. Avoid contact with metals such as: Zinc powders. Aluminum powders. Magnesium powders. Potassium. Sodium. Avoid unintended contact with: Amines.

**10.6 Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Decomposition products can include trace amounts of: Chlorine. Phosgene.

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## SECTION 11. TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

##### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

##### Acute inhalation toxicity

In confined or poorly ventilated areas, vapor can readily accumulate and can cause unconsciousness and death. Vapor may cause irritation of the upper respiratory tract (nose and throat). May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen. Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness, and as low as 10,000 ppm, unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

LC50, Mouse, 4 Hour, vapour, 86 mg/l



**Skin corrosion/irritation**

Brief contact may cause moderate skin irritation with local redness.

May cause more severe response on covered skin (under clothing, gloves).

Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

Extensive skin contact with methylene chloride, such as immersion, may cause an intense burning sensation, followed by a cold, numb feeling which will subside after contact.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause moderate eye irritation which may be slow to heal.

May cause slight corneal injury.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**Sensitization**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

Relevant data not available.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Central nervous system

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

In animals, effects have been reported on the following organs:

Kidney.

Liver.

Blood.

May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

**Carcinogenicity**

Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Other animal studies on methylene chloride alone, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to humans when handled as recommended. Studies have shown that tumors observed in mice are unique to that species. Studies in workers with combined exposures to methylene chloride and 1,2-dichloropropane have reported increased incidences of cholangiocarcinoma.

**Teratogenicity**

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**Reproductive toxicity**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Negative or equivocal results have been obtained in genetic toxicity tests with methylene chloride using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

#### **Aspiration Hazard**

Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

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## **SECTION 12. ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*

### **12.1 Toxicity**

#### **Acute toxicity to fish**

Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 193 mg/l

#### **Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), static test, 27 mg/l, OECD Test Guideline 202 or Equivalent

#### **Acute toxicity to algae/aquatic plants**

EbC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Biomass, > 662 mg/l, OECD Test Guideline 201 or Equivalent

#### **Toxicity to bacteria**

EC50, activated sludge, static test, 40 min, 2,590 mg/l, OECD 209 Test

#### **Chronic aquatic toxicity**

##### **Chronic toxicity to fish**

NOEC, Pimephales promelas (fathead minnow), flow-through test, 28 d, growth, 83 mg/l

### **12.2 Persistence and degradability**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 68 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D or Equivalent

10-day Window: Not applicable

**Biodegradation:** 66 %

**Exposure time:** 50 Hour

**Method:** Simulation study

### **12.3 Bioaccumulative potential**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1.25 at 20 °C Measured  
**Bioconcentration factor (BCF):** 2 - 40 Fish Measured

#### 12.4 Mobility in soil

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 46.8 Estimated.

#### 12.5 Results of PBT and vPvB assessment

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

#### 12.6 Other adverse effects

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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## SECTION 13. DISPOSAL CONSIDERATIONS

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### 13.1 Waste treatment methods

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

**Contaminated packaging:** Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

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## SECTION 14. TRANSPORT INFORMATION

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### Classification for ROAD and Rail transport (ADR/RID):

- |                                   |   |
|-----------------------------------|---|
| 14.1 UN number                    | UN 1593   |
| 14.2 Proper shipping name         | DICHLOROMETHANE   |
| 14.3 Class                        | 6.1   |
| 14.4 Packing group                | III   |
| 14.5 Environmental hazards        | Not considered environmentally hazardous based on available data. |
| 14.6 Special precautions for user | Hazard Identification Number: 60                                  |

### Classification for SEA transport (IMO-IMDG):

- |                           |                 |
|---------------------------|-----------------|
| 14.1 UN number            | UN 1593         |
| 14.2 Proper shipping name | DICHLOROMETHANE |
| 14.3 Class                | 6.1             |

14.4	Packing group	III
14.5	Environmental hazards	Not considered as marine pollutant based on available data.
14.6	Special precautions for user	EmS: F-A, S-A
14.7	Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

14.1	UN number	UN 1593
14.2	Proper shipping name	Dichloromethane
14.3	Class	6.1
14.4	Packing group	III
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## SECTION 15. REGULATORY INFORMATION

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

#### REACH Regulation (EC) No 1907/2006

This product has been registered, according to Regulation (EC) No. 1907/2006 (REACH)., The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

#### Restrictions on the manufacture, placing on the market and use:

The following substance/s contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product have to comply with the restrictions placed upon it by the aforementioned provision.

CAS-No.: 75-09-2	Name: methylene chloride
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Commission Regulation (EU) No 276/2010 for Conditions of restriction

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

Listed in Regulation: Not applicable

**15.2 Chemical safety assessment**

A Chemical Safety Assessment has been carried out for this substance.

**SECTION 16. OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3.**

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.

**Product Literature**

Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

**Revision**

Identification Number: 101198673 / A480 / Issue Date: 10.05.2016 / Version: 11.1

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
GB EH40	UK. EH40 WEL - Workplace Exposure Limits
STEL	Short-term exposure limit (15-minute reference period)
TWA	Long-term exposure limit (8-hour TWA reference period)

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

BLUE CUBE GERMANY ASSETS GMBH & CO. KG urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as

manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

**1. Short title of Exposure Scenario: Manufacture of substance, industrial.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU8, SU9:</b> Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process categories	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	:	<b>ERC1:</b> Manufacture of substances
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC1: Manufacture of substances****Amount used**

Daily amount per site : 85833 kg/day

**Frequency and duration of use**

Continuous exposure : 300 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 0.00596 %

Emission or Release Factor: Water : 0.0396 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Indoor use, Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%): (Effectiveness (of a measure): 93.5 %)

Soil	:	Soil emission controls are not applicable as there is no direct release to
Remarks	:	Prevent discharge of undissolved substance to waste water or recover from wastewater., Domestic sewage treatment is not assumed.

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### 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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Activity	:	General exposures (closed systems) Continuous process
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#### Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
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Physical Form (at time of use)	:	Liquid, vapour pressure > 10 kPa at STP
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#### Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).
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#### Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.
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#### Technical conditions and measures

Handle substance within a closed system.

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

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Activity	:	General exposures Continuous process Automated process with (semi) closed systems.
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#### 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)	:	Liquid, vapour pressure > 10 kPa at STP
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#### Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).
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#### Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.
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**Technical conditions and measures**

Handle substance within a closed system.

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**2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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Activity : General exposures  
Use in contained batch processes

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

---

**2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to

points where emissions occur (Effectiveness (of a measure): 90 %)

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### 2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Provide a good standard of general ventilation (10 to 15 air changes per hour)

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### 2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

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

Activity : General exposures  
Laboratory activities  
small scale  
Manual

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**2.9 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Drain down and flush system prior to equipment opening or maintenance. (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.10 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.11 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is

implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

### 2.12 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

### 2.13 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

### 2.14 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

Activity : General risk management measures applicable to all activities

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC1	Used EUSES model.		Fresh water		0.00811 mg/l	0.0262
			Marine water		0.000715	0.0231
			Fresh water sediment		0.067	0.0262
			Marine sediment		0.00592	0.0231
			Soil		0.00427	0.0128

					mg/kg dry weight (d.w.)
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## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA v2.0 Worker	General exposures (closed systems), Continuous process	Chronic inhalation systemic exposure	0.01 mg/l	0.00
			Chronic dermal systemic exposure	0.03 mg/kg/day	0.00
			Combined routes		0.00
			Acute inhalation systemic exposure	0.01 mg/l	
PROC2	ECETOC TRA v2.0 Worker	Use in closed, continuous process with occasional controlled exposure, Continuous process, Automated process with (semi) closed systems.	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes	0	0.36
PROC3	ECETOC TRA v2.0 Worker	Use in closed batch process (synthesis or formulation), General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57

			Combined routes		0.67
PROC15	ECETOC TRA v2.0 Worker	General exposures, Laboratory activities, small scale, Manual	Chronic inhalation systemic exposure	50 mg/l	0.50
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.53
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.26
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.77
PROCs (all)	ECETOC TRA v2.0 Worker	General measures applicable to all activities	Chronic inhalation systemic exposure		



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

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Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet

<http://cefic.org/en/reach-for-industries-libraries.html>.

Health - Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**1. Short title of Exposure Scenario: Use as an intermediate, industrial.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU8, SU9:</b> Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process categories	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	:	<b>ERC6a:</b> Industrial use resulting in manufacture of another substance (use of intermediates)
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)****Amount used**

Daily amount per site : 8567 kg/day

**Frequency and duration of use**

Continuous exposure : 300 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 0.051 %

Emission or Release Factor: Water : 1 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Indoor use, Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure)	:	93.5 %
Remarks	:	Estimated substance removal from wastewater via domestic sewage treatment.

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure**

Activity	:	General exposures (closed systems) Continuous process
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**Product characteristics**

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
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Physical Form (at time of use)	:	Liquid, vapour pressure > 10 kPa at STP
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**Frequency and duration of use**

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).
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**Other operational conditions affecting workers exposure**

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.
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**Technical conditions and measures**

Handle substance within a closed system.

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

Activity	:	General exposures Continuous process Automated process with (semi) closed systems. with sample collection
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**Product characteristics**

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
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Physical Form (at time of use)	:	Liquid, vapour pressure > 10 kPa at STP
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**Frequency and duration of use**

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).
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**Other operational conditions affecting workers exposure**

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above
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ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

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### 2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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Activity : General exposures  
Use in contained batch processes

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

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### 2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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### **2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### **Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### **Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### **Technical conditions and measures**

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

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### **2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### **Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### **Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)

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

Activity : General exposures  
Laboratory activities  
small scale  
Manual

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**2.9 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Drain down and flush system prior to equipment opening or maintenance. (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

**2.10 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

**2.11 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is

implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

### 2.12 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

Activity : General risk management measures applicable to all activities

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC6a	Used EUSES model.		Fresh water		0.0296 mg/l	0.867
			Marine water		0.0268 mg/l	0.864
			Fresh water sediment		2.22 mg/kg dry weight (d.w.)	0.867
			Marine sediment		0.222 mg/kg dry weight (d.w.)	0.864



			Soil		0.331 mg/kg dry weight (d.w.)	0.99
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## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA v2.0 Worker	General exposures (closed systems), Continuous process	Chronic inhalation systemic exposure	0.01 mg/l	0.00
			Chronic dermal systemic exposure	0.03 mg/kg/day	0.00
			Combined routes		0.00
PROC2	ECETOC TRA v2.0 Worker	General exposures, Continuous process, Automated process with (semi) closed systems.	Chronic inhalation systemic exposure	25 mg/l	0.25
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.36
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
			Acute inhalation systemic exposure	mg/l	
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67
PROC15	ECETOC TRA v2.0 Worker	General exposures, Laboratory activities, small scale, Manual	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.34	0.03

			systemic exposure	mg/kg/day	
			Combined routes		0.53
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

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**1. Short title of Exposure Scenario: Formulation & (re)packing of substances and mixtures, industrial.**


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Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	:	<b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	:	<b>ERC2:</b> Formulation of preparations
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

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**2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations**


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**Amount used**

Daily amount per site : 797 kg/day

**Frequency and duration of use**

Continuous exposure : 300 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 2.5 %

Emission or Release Factor: Water : 2 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Used in open system., Indoor use, Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct

Remarks : release to  
: Prevent discharge of undissolved substance to waste water or  
recover from wastewater.

#### Conditions and measures related to municipal sewage treatment plant

Effectiveness (of a measure) : 93.5 %  
Remarks : Estimated substance removal from wastewater via domestic  
sewage treatment.

Flow rate of sewage treatment : 2,000 m<sup>3</sup>/d  
plant effluent  
Remarks : Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d).

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#### 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

#### Product characteristics

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

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated  
differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is  
implemented., Assumes use at not more than 20°C above  
ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

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#### 2.3 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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Activity : General exposures  
Use in contained batch processes

#### Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article : 100 % (unless stated differently).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

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**2.4 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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**2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

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**2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

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**2.7 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

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Activity : General exposures  
Mixing operations (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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.8 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

Activity : General exposures  
Mixing operations (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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

**2.9 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

Activity : General exposures  
Mixing operations (open systems)

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated

differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

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

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Activity : General exposures  
Laboratory activities  
small scale  
Manual

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

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### 2.11 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use



Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

#### 2.12 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

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#### 2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

#### Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article : 100 % (unless stated differently).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

**2.14 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

**2.15 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

**2.16 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

**3. Exposure estimation and reference to its source**

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR

ERC2	Used EUSES model.		Fresh water		0.259 mg/l	0.836
			Marine water		0.029 mg/l	0.833
			Fresh water sediment		2.15 mg/kg dry weight (d.w.)	0.836
			Marine sediment		0.214 mg/kg dry weight (d.w.)	0.833
			Soil		0.32 mg/kg dry weight (d.w.)	0.958

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67
PROC5	ECETOC TRA v2.0 Worker	General exposures, Mixing operations (open systems)	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48

PROC5	ECETOC TRA v2.0 Worker	General exposures, Mixing operations (open systems)	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC5	ECETOC TRA v2.0 Worker	General exposures, Mixing operations (open systems)	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC15	ECETOC TRA v2.0 Worker	General exposures, Laboratory activities, small scale, Manual	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.53
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility,	Chronic inhalation systemic exposure	20.00 mg/l	0.20

		Drum and small package filling, Material transfers			
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.26
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.77

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

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Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

Health - Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**1. Short title of Exposure Scenario: Use as a process solvent.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU5, SU9:</b> Manufacture of textiles, leather, fur, Manufacture of fine chemicals
Process categories	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC10:</b> Roller application or brushing <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	:	<b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles****Amount used**

Daily amount per site : 24100 kg/day

**Frequency and duration of use**

Continuous exposure : 100 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 6.69 %

Emission or Release Factor: Water : 0.154 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Indoor use, Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure) : 93.5 %

Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d  
 Remarks : Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d).

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### 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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Activity : General exposures (closed systems)  
 Continuous process

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

---

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

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Activity : General exposures  
 Continuous process  
 Automated process with (semi) closed systems.  
 with sample collection

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.



**Technical conditions and measures**

Handle substance within a closed system.

---

**2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

---

Activity : General exposures  
Use in contained batch processes

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

---

**2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to

points where emissions occur (Effectiveness (of a measure): 90 %)

---

### 2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

---

### 2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

**2.9 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

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

---

Activity : General exposures  
Laboratory activities  
small scale  
Manual

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

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### 2.11 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide

basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
	Used EUSES model.		Fresh water		0.082 mg/l	0.266
			Marine water		0.00815 mg/l	0.263
			Fresh water sediment		0.682 mg/kg dry weight (d.w.)	0.266
			Marine sediment		0.0674 mg/kg dry weight (d.w.)	0.263
			Soil		0.143 mg/kg dry weight (d.w.)	

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA v2.0 Worker	General exposures (closed systems), Continuous process	Chronic inhalation systemic exposure	0.01 mg/l	0.00
			Chronic dermal systemic exposure	0.03 mg/kg/day	0.00
			Combined routes		0.00
PROC2	ECETOC TRA v2.0 Worker	General exposures, Continuous process, Automated process with (semi) closed systems., with sample collection	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.36
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56

PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC15	ECETOC TRA v2.0 Worker	General exposures, Laboratory activities, small scale, Manual	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.53
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet  
<http://cefic.org/en/reach-for-industries-libraries.html>.

Health - Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**1. Short title of Exposure Scenario: Uses in Coatings, industrial.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU11, SU18:</b> Manufacture of rubber products, Manufacture of furniture
Process categories	:	<b>PROC7:</b> Industrial spraying <b>PROC10:</b> Roller application or brushing
Environmental Release Categories	:	<b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles****Amount used**

Daily amount per site : 10720 kg/day

**Frequency and duration of use**

Continuous exposure : 100 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**

Flow rate of receiving surface : 18,000 m3/d  
water

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 95 %  
Emission or Release Factor: Water : 100 %  
Emission or Release Factor: Soil : 0 %  
Remarks : Used in closed system, Indoor use, Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.  
Soil : Soil emission controls are not applicable as there is no direct release to  
Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure) : 93.5 %  
Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

Flow rate of sewage treatment plant effluent : 2,000 m3/d

Remarks : Assumed domestic sewage treatment plant flow (m3/d).



**2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities**

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Activity : General risk management measures applicable to all activities

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

**2.3 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

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Activity : General exposures (open systems)  
Spraying

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings., Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.4 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

Activity : General exposures (open systems)  
Spraying

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

**2.5 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

Activity : General exposures (open systems)  
Spraying

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation

at openings. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

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**2.6 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

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Activity : General exposures (open systems)  
Spraying

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

---

**2.7 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

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Activity : General exposures (open systems)  
Spraying

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

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### 2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

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### 2.9 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

**3. Exposure estimation and reference to its source**

## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
	Used EUSES model.		Fresh water		0.00496 mg/l	0.016
			Marine water		0.0004 mg/l	0.0129
			Fresh water sediment		0.0411 mg/kg dry weight (d.w.)	0.016
			Marine sediment		0.000331 mg/kg dry weight (d.w.)	0.0129
			Soil		0.0508 mg/kg dry weight (d.w.)	0.152

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	0.13 mg/kg/day	0.01
			Combined routes		0.16
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	2.57 mg/kg/day	0.21
			Combined routes		0.59
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	5.00 mg/l	0.05
			Chronic dermal systemic exposure	0.04 mg/kg/day	0.00000
			Combined routes		0.05

PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	0.86 mg/kg/day	0.07
			Combined routes		0.67
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.86
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

**1. Short title of Exposure Scenario: Use in Cleaning Agents, industrial.**

Main User Groups	: <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU5, SU7, SU12, SU13, SU17:</b> Manufacture of textiles, leather, fur, Printing and reproduction of recorded media, Manufacture of plastics products, including compounding and conversion, Manufacture of other non-metallic mineral products, e.g. plasters, cement, General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Process categories	: <b>PROCs (all):</b> General measures applicable to all activities <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC7:</b> Industrial spraying <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental Release Categories	: <b>ERC4, ERC7:</b> Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of substances in closed systems
Further information	: <b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles****Amount used**

Daily amount per site : 59000 kg

**Frequency and duration of use**

Continuous exposure : 20 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 3 %

Emission or Release Factor: Water : 0.11 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Indoor use, Used in dry processes., Used in wet processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or

recover from wastewater.

#### Conditions and measures related to municipal sewage treatment plant

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 93.5 %  
 Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

---

#### 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection. (Effectiveness (of a measure): 95 %)  
 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

---

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

---

Activity : General exposures  
 Continuous process  
 Automated process with (semi) closed systems.  
 Vapour degreasing bath

#### Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to



Mixture/Article : 100 % (unless stated differently).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

---

**2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**


---

Activity : General exposures  
Use in contained batch processes

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

---

**2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

---

**2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

---

**2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.8 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

---

Activity : General exposures (open systems)  
Spraying

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

---

**2.9 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

---

Activity : General exposures (open systems)  
Spraying

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

**2.10 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

Activity : General exposures (open systems)  
Spraying

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.11 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

Activity : General exposures (open systems)  
Spraying

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.12 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

Activity : General exposures (open systems)  
Spraying

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**2.13 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

#### 2.14 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 95 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

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

Activity : General exposures (open systems)  
Dipping, immersion and pouring

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**3. Exposure estimation and reference to its source**

## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC4 ERC7	Used EUSES model.		Fresh water		0.00652 mg/l	0.0207
			Marine water		0.00556 mg/l	0.0176
			Fresh water sediment		0.054 mg/kg dry weight (d.w.)	0.0207
			Marine sediment		0.0046 mg/kg dry weight (d.w.)	0.0176



			Soil		0.00211 mg/kg dry weight (d.w.)	0.00952
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## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC2	ECETOC TRA v2.0 Worker	General exposures, Continuous process, Automated process with (semi) closed systems., Vapour degreasing bath	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.36
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	0.21 mg/kg/day	0.02
			Combined routes		0.27
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems),	Chronic inhalation systemic exposure	50.00 mg/l	0.50

		Spraying			
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.86
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	5.00 mg/l	0.05
			Chronic dermal systemic exposure	0.04 mg/kg/day	0.0000
			Combined routes		0.05
PROC7	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	0.86 mg/kg/day	0.07
			Combined routes		0.67
PROC7	ECETOC TRA v2.0 Worker	Continuous process, (closed systems)	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.86
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC13	ECETOC TRA	General exposures	Chronic inhalation	50.00 mg/l	0.50

	v2.0 Worker	(open systems), Dipping, immersion and pouring	systemic exposure		
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.44

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

Health - Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**1. Short title of Exposure Scenario: Blowing agents, industrial.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC12:</b> Use of blowing agents in manufacture of foam
Environmental Release Categories	:	<b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles****Amount used**

Daily amount per site : 3183 kg/day

**Frequency and duration of use**

Continuous exposure : 300 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 100 %

Emission or Release Factor: Water : 0.11 %

Emission or Release Factor: Soil : 0 %

Remarks : Used in closed system, Indoor/Outdoor use., Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure)	:	93.5 %
Remarks	:	Estimated substance removal from wastewater via domestic sewage treatment.
Flow rate of sewage treatment plant effluent	:	2,000 m <sup>3</sup> /d
Remarks	:	Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d).

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## 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

## 2.3 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

---

Activity : General exposures (closed systems)  
Continuous process

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated

differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

---

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

---

Activity : General exposures  
Continuous process  
Automated process with (semi) closed systems.  
with sample collection

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

---

### 2.5 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

---

Activity : General exposures  
Use in contained batch processes

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

---

**2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : General exposures  
Batch process  
(open systems)

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

---

**2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : General exposures  
Batch process  
(open systems)

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

---

**2.8 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**


---

Activity : General exposures  
Batch process  
(open systems)

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.9 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**


---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is



implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

### 2.10 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

### 2.11 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

---

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

---

**2.12 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**


---

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

**2.13 Contributing scenario controlling worker exposure for: PROC12: Use of blowing agents in manufacture of foam**


---

Activity : General exposures (open systems)  
Foaming

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

---

**2.14 Contributing scenario controlling worker exposure for: PROC12: Use of blowing agents in manufacture of foam**

---

Activity : General exposures (open systems)  
Foaming

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.15 Contributing scenario controlling worker exposure for: PROC12: Use of blowing agents in manufacture of foam**

---

Activity : General exposures (open systems)  
Foaming

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above

ambient temperature.

### Organisational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC4	Used EUSES model.		Fresh water		0.015 mg/kg dry weight (d.w.)	0.049
			Marine water		0.00142 mg/kg dry weight (d.w.)	0.0459
			Fresh water sediment		0.126 mg/kg dry weight (d.w.)	0.049
			Marine sediment		0.0118 mg/kg dry weight (d.w.)	0.0459
			Soil		0.054 mg/kg dry weight (d.w.)	0.161

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC1	ECETOC TRA v2.0 Worker	General exposures (closed systems), Continuous process	Chronic inhalation systemic exposure	0.01 mg/l	0.00
			Chronic dermal systemic exposure	0.03 mg/kg/day	0.00
			Combined routes		0.00
			Acute inhalation systemic exposure	mg/l	
PROC2	ECETOC TRA v2.0 Worker	General exposures, Continuous process, Automated process with (semi) closed systems., with sample collection	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11

			Combined routes		0.36
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, (open systems), Batch process	Chronic inhalation systemic exposure	30.0 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.26
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small	Chronic inhalation systemic exposure	20.00 mg/l	0.20

		package filling, Material transfers			
			Chronic dermal systemic exposure	6.89 mg/kg/day	0.57
			Combined routes		0.77
PROC12	ECETOC TRA v2.0 Worker	General exposures (open systems), Foaming	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.13
PROC12	ECETOC TRA v2.0 Worker	General exposures (open systems), Foaming	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.13
PROC12	ECETOC TRA v2.0 Worker	General exposures (open systems), Foaming	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.13

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

Health - Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**1. Short title of Exposure Scenario: Functional Fluids, industrial.**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises
Environmental Release Categories	:	<b>ERC7:</b> Industrial use of substances in closed systems
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems****Amount used**

Daily amount per site : 500 kg/day

**Frequency and duration of use**

Continuous exposure : 20 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**

Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 0.11 %  
Emission or Release Factor: Soil : 0.11 %  
Remarks : (closed systems), Indoor/Outdoor use., Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.  
Soil : Soil emission controls are not applicable as there is no direct release to  
Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure) : 93.5 %  
Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

Flow rate of sewage treatment : 2,000 m<sup>3</sup>/d

plant effluent  
Remarks : Assumed domestic sewage treatment plant flow (m3/d).

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## 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

### 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) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

## 2.3 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

---

Activity : General exposures (closed systems)  
Continuous process

### 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) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above



ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

---

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

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Activity : General exposures  
Continuous process  
Automated process with (semi) closed systems.  
with sample collection

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Handle substance within a closed system.

---

### 2.5 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

---

Activity : General exposures  
Use in contained batch processes

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Handle substance within a closed system.

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**2.6 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 90 %)

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**2.7 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

### 2.8 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Activity : General exposures  
Batch process  
(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).

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC7	Used EUSES model.		Fresh water		0.00652 mg/l	0.0207
			Marine water		0.00556 mg/l	0.0176
			Fresh water sediment		0.054 mg/kg dry weight (d.w.)	0.0207
			Marine sediment		0.0046 mg/kg dry weight (d.w.)	0.0176
			Soil		0.00211 mg/kg dry weight (d.w.)	0.00952

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
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PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC1	ECETOC TRA v2.0 Worker	General exposures (closed systems), Continuous process	Chronic inhalation systemic exposure	0.01 mg/l	0.00
			Chronic dermal systemic exposure	0.03 mg/kg/day	0.00
			Combined routes		0.00
PROC2	ECETOC TRA v2.0 Worker	General exposures, Continuous process, Automated process with (semi) closed systems., with sample collection	Chronic inhalation systemic exposure	25.00 mg/l	25.00
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.36
PROC3	ECETOC TRA v2.0 Worker	General exposures, Use in contained batch processes	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.56
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	0.69 mg/kg/day	0.06
			Combined routes		0.16
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	30.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.87
PROC4	ECETOC TRA v2.0 Worker	General exposures, Batch process, (open systems)	Chronic inhalation systemic exposure	10.00 mg/l	0.30
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.67

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site

technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

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**1. Short title of Exposure Scenario: Uses in Coatings, professional.**

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Main User Groups	:	<b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	:	<b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying
Environmental Release Categories	:	<b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

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**2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems**

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**Amount used**

Daily amount per site : 6.14 kg/day

**Frequency and duration of use**

Continuous exposure : 365 Emission days/year, Continuous release.

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m3/d

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 100 %

Emission or Release Factor: Water : 100 %

Emission or Release Factor: Soil : 1 %

Remarks : Used in closed system, Used in open system., Indoor/Outdoor use., Used in dry processes., Used in wet processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure) : 93.5 %

Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

Flow rate of sewage treatment plant effluent : 2,000 m3/d

Remarks : Assumed domestic sewage treatment plant flow (m3/d).

## 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

---

Activity : General risk management measures applicable to all activities

### Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection. (Effectiveness (of a measure): 95 %)

## 2.3 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Indoor

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

---

#### 2.4 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

#### 2.5 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is



implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

### 2.6 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 95 %)

---

### 2.7 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

**2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

---

**2.9 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

**2.10 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

**2.11 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

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**2.12 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

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#### 2.13 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure operation is undertaken outdoors.

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#### 2.14 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

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Activity : General exposures (open systems)  
Spraying  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

**2.15 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 50%.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 95 %)

**2.16 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

**2.17 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 95 %)

**2.18 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)

Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

**2.19 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

**2.20 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**



Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

**2.21 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.22 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

---

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.23 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

---

Activity : General exposures (open systems)  
Spraying  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)

(Effectiveness (of a measure): 95 %)

---

**2.24 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

---

Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

(Effectiveness (of a measure): 95 %)

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**2.25 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

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Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)

(Effectiveness (of a measure): 95 %)

**3. Exposure estimation and reference to its source**

## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a ERC8d	Used EUSES model.		Fresh water		0.019 mg/l	0.0627
	Used EUSES model.		Marine water		0.00185 mg/l	0.0596
			Fresh water sediment		0.161 mg/kg dry weight (d.w.)	0.0627
			Marine sediment		0.0153 mg/kg dry weight (d.w.)	0.0596
			Soil		0.0183 mg/kg dry weight (d.w.)	0.0548

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.83
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50

			Chronic dermal systemic exposure	1.65 mg/kg/day	0.23
			Combined routes		0.73
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	Roller application or brushing	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	Roller application or brushing	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	Roller application or brushing	Chronic inhalation systemic exposure	0.20 mg/l	0.20
			Chronic dermal systemic exposure	1.10 mg/kg/day	0.09
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	1.10 mg/kg/day	0.09
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	0.35 mg/l	0.35
			Chronic dermal systemic exposure	2.74	0.23

			systemic exposure	mg/kg/day	
			Combined routes		0.58
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.24
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	35.00 mg/l	0.35
			Chronic dermal systemic exposure	1.10 mg/kg/day	0.09
			Combined routes		0.44
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	40.00 mg/l	0.40
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.58
	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.38
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	72.00 mg/l	0.72
			Chronic dermal systemic exposure	1.29 mg/kg/day	0.11
			Combined routes		0.83
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	12.00 mg/l	0.12
			Chronic dermal systemic exposure	1.29 mg/kg/day	0.11
			Combined routes		0.23
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	40.00 mg/l	0.40
			Chronic dermal systemic exposure	0.86 mg/kg/day	0.07
			Combined routes		0.47
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems),	Chronic inhalation systemic exposure	40.00 mg/l	0.40

		Spraying, Indoor	Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.76
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.56
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.38
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	0.60 mg/kg/day	0.18
			Combined routes		0.78
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.78
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	21.00 mg/l	0.21
			Chronic dermal systemic exposure	6.43 mg/kg/day	0.54
			Combined routes		0.75
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	28.00 mg/l	0.28
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.64

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

**1. Short title of Exposure Scenario: Use in Cleaning Agents, professional.**

Main User Groups	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	: <b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying <b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental Release Categories	: <b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	: <b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

**2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems****Amount used**

Daily amount per site : 6.47 kg/day

**Frequency and duration of use**

Continuous exposure : 365 Emission days/year, Dispersive use.

**Environment factors not influenced by risk management**

Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 100 %  
Emission or Release Factor: Water : 100 %  
Emission or Release Factor: Soil : 1 %  
Remarks : Used in closed system, Used in open system., Indoor/Outdoor use., Used in dry processes., Used in wet processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.  
Soil : Soil emission controls are not applicable as there is no direct release to  
Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Effectiveness (of a measure) : 93.5 %  
Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d

Remarks : Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d).



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**2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities**


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Activity : General risk management measures applicable to all activities

**Product characteristics**

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

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**2.3 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**


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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Indoor

**Product characteristics**

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

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#### 2.4 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance  
Outdoor

##### Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

##### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

##### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

##### Technical conditions and measures

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

---

#### 2.5 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

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Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

##### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

##### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

##### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

---

**2.6 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

---

Activity : General exposures (open systems)  
Spraying  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.7 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

---

Activity : General exposures (open systems)  
Spraying  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

### 2.8 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Activity : General exposures (open systems)  
Spraying  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 95 %)

### 2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Activity : General exposures (open systems)  
Spraying  
Large surfaces  
Cleaning with high pressure washers  
Outdoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., full face mask (DIN EN 136)  
(Effectiveness (of a measure): 95 %)

**2.10 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Large surfaces  
Cleaning with high pressure washers  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

**2.11 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

Activity : General exposures (open systems)  
Spraying  
Large surfaces  
Cleaning with high pressure washers  
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, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors. (Effectiveness (of a measure): 80 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring

Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring

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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

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

---



Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

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

---

Activity : General exposures (open systems)  
Dipping, immersion and pouring  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**3. Exposure estimation and reference to its source**

## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC1	Used EUSES model.		Fresh water		0.024 mg/l	0.0773
			Marine water		0.0239	0.0742
			Fresh water sediment		0.106	0.0773
			Marine sediment		0.00983	0.0742
			Soil		0.024 mg/kg dry weight (d.w.)	0.0717

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	17.50 mg/l	0.18
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.40
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	40.00 mg/l	0.40
			Chronic dermal	2.14	0.18

			systemic exposure	mg/kg/day	
			Combined routes		0.58
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.56
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.78
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	2.14 mg/kg/day	0.18
			Combined routes		0.38
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	21.00 mg/l	0.21
			Chronic dermal systemic exposure	6.43 mg/kg/day	0.54
			Combined routes		0.75
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	28.00 mg/l	0.28
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.64
PROC11	ECETOC TRA v2.0 Worker	General exposures (open systems), Spraying, Outdoor	Chronic inhalation systemic exposure	14.00 mg/l	0.14
			Chronic dermal systemic exposure	4.29 mg/kg/day	0.36
			Combined routes		0.50
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Indoor	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48

PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.73
PROC1	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Outdoor	Chronic inhalation systemic exposure	35.00 mg/l	0.35
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.58
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Outdoor	Chronic inhalation systemic exposure	17.50 mg/l	0.18
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.40
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Outdoor	Chronic inhalation systemic exposure	63.00 mg/l	0.63
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.77
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.24
PROC13	ECETOC TRA v2.0 Worker	General exposures (open systems), Dipping, immersion and pouring, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.24

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

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Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

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**1. Short title of Exposure Scenario: Formulation & (Re)Packaging of substances and mixtures, professional**


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Main User Groups	:	<b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	:	<b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	:	<b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

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**2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems**


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**Amount used**

Daily amount per site : 15.4 kg/day

**Frequency and duration of use**

Continuous exposure : 365 Emission days/year, Dispersive use.

**Environment factors not influenced by risk management**Flow rate of receiving surface : 18,000 m<sup>3</sup>/d  
water**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 100 %

Emission or Release Factor: Water : 100 %

Emission or Release Factor: Soil : 1 %

Remarks : Used in closed system, Used in open system., Indoor/Outdoor use., Used in dry processes., Used in wet processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

**Conditions and measures related to municipal sewage treatment plant**Flow rate of sewage treatment : 2,000 m<sup>3</sup>/d  
plant effluent

Effectiveness (of a measure) : 93.5 %

Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

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## 2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities

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Activity : General risk management measures applicable to all activities

### Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

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## 2.3 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Indoor

### 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) : Liquid, vapour pressure > 10 kPa at STP

### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

### Other operational conditions affecting workers exposure



Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

#### 2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Indoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

#### 2.5 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

Activity : General exposures  
Non-dedicated facility  
Material transfers

Equipment cleaning and maintenance  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

**2.6 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**


---

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

---

**2.7 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**


---

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

**2.8 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Indoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

---

**2.9 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**


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Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

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**2.10 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**


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Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

#### 2.11 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

Activity : General exposures  
Non-dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Technical conditions and measures

Ensure operation is undertaken outdoors.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 1 hour.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

#### 2.12 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

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**2.14 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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**2.14 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**


---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.15 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**


---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

---

**2.16 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

---

Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 90 %)

---

**2.17 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

---



Activity : General exposures  
Dedicated facility  
Material transfers  
Equipment cleaning and maintenance  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

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**2.18 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**


---

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation., Provide extract ventilation to points where emissions occur (Effectiveness (of a measure): 80 %)

---

**2.19 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

---

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers  
Indoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)  
(Effectiveness (of a measure): 90 %)

---

**2.20 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

---

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

**2.21 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers  
Outdoor

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

**2.22 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : General exposures  
Dedicated facility  
Drum and small package filling  
Material transfers  
Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP  
**Frequency and duration of use**  
 Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374.

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**2.23 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**


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Activity : General exposures  
 Dedicated facility  
 Drum and small package filling  
 Material transfers  
 Outdoor

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 90 %)

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**3. Exposure estimation and reference to its source**


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## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC1	Used EUSES model.		Fresh water		0.024 mg/l	0.0773
			Marine water		0.0239	0.0742
			Fresh water sediment		0.106	0.0773
			Marine sediment		0.00983	0.0742
			Soil		0.024 mg/kg dry weight (d.w.)	0.0717

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v2.0 Worker	General risk management measures applicable to all activities			
PROC1	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.29
PROC1	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.29
PROC8a	ECETOC TRA	General exposures,	Chronic inhalation	50.00 mg/l	0.50

	v2.0 Worker	Non-dedicated facility, Material transfers, Equipment cleaning and maintenance	systemic exposure		
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	60.00 mg/l	0.60
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.83
PROC1	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.61
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	17.50 mg/l	0.18
			Chronic dermal systemic exposure	2.74 mg/kg/day	2.74
			Combined routes		0.40
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.24
PROC8a	ECETOC TRA v2.0 Worker	General exposures, Non-dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	42.00 mg/l	0.42
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.56
PROC8b	ECETOC TRA	General exposures,	Chronic inhalation	15.00 mg/l	0.15

	v2.0 Worker	Dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	systemic exposure		
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance, Indoor	Chronic inhalation systemic exposure	15.00 mg/l	0.15
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.38
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	63.00 mg/l	0.63
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.86
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.33
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	63.00 mg/l	0.63
			Chronic dermal systemic exposure	1.65 mg/kg/day	0.14
			Combined routes		0.77
PROC8b	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Material transfers, Equipment cleaning and maintenance, Outdoor	Chronic inhalation systemic exposure	10.50 mg/l	0.11
			Chronic dermal systemic exposure	1.65 mg/kg/day	1.65

			Combined routes		0.24
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Indoor	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.61
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Indoor	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	6.86 mg/kg/day	0.57
			Combined routes		0.77
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Outdoor	Chronic inhalation systemic exposure	28.00 mg/l	0.28
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.39
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Outdoor	Chronic inhalation systemic exposure	14.00 mg/l	0.14
			Chronic dermal systemic exposure	1.37 mg/kg/day	0.11
			Combined routes		0.25
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Outdoor	Chronic inhalation systemic exposure	50.40 mg/l	0.50
			Chronic dermal systemic exposure	0.82 mg/kg/day	0.07
			Combined routes		0.57
PROC9	ECETOC TRA v2.0 Worker	General exposures, Dedicated facility, Drum and small package filling, Material transfers, Outdoor	Chronic inhalation systemic exposure	8.40 mg/l	0.08



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			Chronic dermal systemic exposure	0.82 mg/kg/day	0.07
			Combined routes		0.15

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

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Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.

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**1. Short title of Exposure Scenario: Use in laboratories, professional.**

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Main User Groups	:	<b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	:	<b>SU24:</b> Scientific research and development
Process categories	:	<b>PROC10:</b> Roller application or brushing <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	:	<b>ERC8a:</b> Wide dispersive indoor use of processing aids in open systems
Further information	:	<b>PrC1, PrC4b, PrC5e:</b> Substance is a unique structure., Non-hydrophobic., Inherently biodegradable, not fulfilling criteria.

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**2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems**

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**Amount used**

Daily amount per site : 704 kg/day

**Frequency and duration of use**

Continuous exposure : 365 Emission days/year, Dispersive use.

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m3/d

**Other given operational conditions affecting environmental exposure**

Emission or Release Factor: Air : 100 %

Emission or Release Factor: Water : 100 %

Emission or Release Factor: Soil : 1 %

Remarks : Used in closed system, Used in open system., Indoor/Outdoor use., Used in wet processes., Used in dry processes., Common practices vary across sites thus conservative process release estimates used.

**Technical conditions and measures / Organizational measures**

Air : No air emission controls required; required removal efficiency is 0%.

Soil : Soil emission controls are not applicable as there is no direct release to

Remarks : Prevent discharge of undissolved substance to waste water or recover from wastewater.

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

Flow rate of sewage treatment plant effluent : 2,000 m3/d

Effectiveness (of a measure) : 93.5 %

Remarks : Estimated substance removal from wastewater via domestic sewage treatment.

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**2.2 Contributing scenario controlling worker exposure for: PROCs (all): General measures applicable to all activities**

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Activity : General risk management measures applicable to all activities

#### Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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

Use suitable eye protection., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 95 %)

### 2.3 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

#### 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) : Liquid, vapour pressure > 10 kPa at STP

#### Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

#### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140) (Effectiveness (of a measure): 95 %)

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**2.4 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

**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, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 1 hour.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 95 %)

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**2.5 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

---

Activity : General exposures (open systems)  
Rolling, Brushing  
Equipment cleaning and maintenance

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.,  
Wear a respirator conforming to EN140 with Type A filter or better., half-face mask (DIN EN 140)

(Effectiveness (of a measure): 95 %)

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

Activity : General exposures  
Laboratory activities  
small scale  
Manual

**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) : Liquid, vapour pressure > 10 kPa at STP

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature.

**Organisational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC1	Used EUSES model.		Fresh water		0.00577 mg/l	0.011
			Marine water		0.00481	0.00248
			Fresh water sediment		0.0477	0.011
			Marine sediment		0.00398	0.00248
			Soil		0.00116 mg/kg dry weight (d.w.)	0.00199

**Workers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROCs (all)	ECETOC TRA v3.0 Worker	General risk management measures applicable			

		to all activities			
PROC1	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	25.00 mg/l	0.25
			Chronic dermal systemic exposure	2.74 mg/kg/day	0.23
			Combined routes		0.48
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	20.00 mg/l	0.20
			Chronic dermal systemic exposure	1.10 mg/kg/day	0.09
			Combined routes		0.29
PROC10	ECETOC TRA v2.0 Worker	General exposures (open systems), Rolling, Brushing, Equipment cleaning and maintenance	Chronic inhalation systemic exposure	10.00 mg/l	0.10
			Chronic dermal systemic exposure	1.10 mg/kg/day	0.09
			Combined routes		0.19
PROC15	ECETOC TRA v2.0 Worker	General exposures, Laboratory activities, small scale, Manual	Chronic inhalation systemic exposure	50.00 mg/l	0.50
			Chronic dermal systemic exposure	0.34 mg/kg/day	0.03
			Combined routes		0.53

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

Environment - Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet <http://cefic.org/en/reach-for-industries-libraries.html>.