

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

## TETRAETHYLENEPENTAMINE (TEPA)

Version 1      Revision Date 10.12.2013      Print Date 27.02.2014      GB / EN

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

#### 1.1 Product identifier

Trade name : TETRAETHYLENEPENTAMINE (TEPA)  
Substance name : Tetraethylenepentamine, linear, cyclic and branched  
Index-No. : 612-060-00-0

REACH Registration Number : 01-2119487290-37-0002

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

Use of the Substance/Mixture : Specific use(s): Refer to attached exposure scenario Annex.

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

Company : Akzo Nobel Functional Chemicals AB  
Ethylene Amines  
ANC Stenungsund  
Stenunge Allé 3  
SE 444 85 Stenungsund  
Sweden  
Telephone : 4630385000  
Telefax : 46303770551  
E-mail address : RegulatoryAffairs@akzonobel.com

#### 1.4 Emergency telephone number

Emergency telephone number : 020 99 60 00 Kemiakuten, SE +31 57 06 79 211 AkzoNobel, NL

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### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

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

Acute toxicity, 4, H302  
Acute toxicity, 4, H312  
Skin corrosion, 1B, H314  
Skin sensitisation, 1, H317  
Chronic aquatic toxicity, 2, H411

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

## Classification (67/548/EEC, 1999/45/EC)

Corrosive, C, R34  
Harmful, Xn, R21/22  
Sensitising, Xi, R43  
Dangerous for the environment, N, R51/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

## 2.2 Label elements

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

Symbol(s)



Signal word

: Danger

Hazard statements

: H302 + H312

Harmful if swallowed or in contact with skin

H314

Causes severe skin burns and eye damage.

H317

May cause an allergic skin reaction.

H411

Toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P273

Avoid release to the environment.

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P303 + P361 + P353

IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310

Immediately call a POISON CENTER or doctor/ physician.

### Hazardous components which must be listed on the label:

Tetraethylenepentamine

112-57-2

## 2.3 Other hazards

No further data available.

PBT and vPvB assessment

: This substance/mixture contains no components considered

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to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

CAS-No. : 90640-66-7

#### Hazardous substance

Chemical Name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Classification (67/548/EEC)	Concentration [%]
Tetraethylenepentamine		112-57-2 203-986-2 01- 2119487290- 37	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Chronic 2; H411	C; R34 Xn; R21/22 R43 N; R51-R53	100

#### The following substances have multiple CAS-number

Tetraethylenepentamine : 90640-66-7

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

For the full text of the R-phrases mentioned in this Section, see Section 16.

#### REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : not applicable

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

- General advice : Immediate medical attention is required.  
Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.
- If inhaled : If breathed in, move person into fresh air.  
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.  
Rinse immediately with plenty of water.  
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
If skin irritation persists, call a physician.
- In case of eye contact : Rinse with plenty of water.  
Get medical attention immediately. Continue to rinse during transport.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.

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Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Take victim immediately to hospital. Do not induce vomiting! May cause chemical burns in mouth and throat.

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

Symptoms : corrosive effects  
sensitising effects

Risks : No information available.

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

Treatment : No information available.

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## SECTION 5: FIREFIGHTING MEASURES

### 5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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

Specific hazards during firefighting / Specific hazards arising from the chemical : Do not allow run-off from fire fighting to enter drains or water courses.  
Combustion products : Carbon oxides  
nitrogen oxides (NO<sub>x</sub>)

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.  
Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.  
Wear respiratory protection.  
Ensure adequate ventilation.

### 6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

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## 6.3 Methods and materials for containment and cleaning up

Methods for cleaning up /  
Methods for containment : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).  
Keep in suitable, closed containers for disposal.

## 6.4 Reference to other sections

Additional advice : For personal protection see section 8.

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## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.  
Avoid formation of aerosol.  
Do not breathe vapours or spray mist.  
Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.  
Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place.  
Reacts with copper, aluminium, zinc and their alloys.

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

### 7.3 Specific end use(s)

Specific use(s) : Refer to attached exposure scenario Annex.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Tetraethylenepentamine	Workers	Skin contact	Long-term systemic effects	0.74 mg/kg bw/day

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	Workers	Inhalation	Long-term systemic effects	1.29 mg/m <sup>3</sup>
	Consumers	Skin contact	Acute systemic effects	10 mg/kg bw/day
	Consumers	Skin contact	Long-term systemic effects	0.32 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.38 mg/m <sup>3</sup>
	Consumers	Ingestion	Long-term systemic effects	0.53 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
Tetraethylenepentamine	Fresh water	0.00068 mg/l
	Marine water	0.00068 mg/l
	Fresh water sediment	3.43 mg/kg dry weight
	Marine sediment	0.343 mg/kg dry weight
	Sewage treatment plant	9.73 mg/l
	Soil	0.683 mg/kg dry weight

## 8.2 Exposure controls

### Engineering Controls

Effective exhaust ventilation system

Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protective equipment

- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.  
Wear full face mask supplied with:  
Gas cartridge K (ammonia, green).
- Hand protection : butyl-rubber
- Eye protection : Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Protective suit
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.  
When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.  
Wash contaminated clothing before re-use.

### Environmental exposure controls

- General advice : Do not flush into surface water or sanitary sewer system.  
If the product contaminates rivers and lakes or drains inform respective authorities.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

Form	: liquid
Colour	: yellow
Odour	: ammoniacal
Odour Threshold	: no data available

#### Safety data

pH	: 11.8 at 2 % solution
Melting point/range	: -30 °C
Boiling point/boiling range	: > 300 °C
Flash point	: > 100 - 199 °C
Ignition temperature	: 330 °C
Evaporation rate	: no data available
Flammability (solid, gas)	: The product is not flammable.
Lower explosion limit	: 0.1 %(V)
Upper explosion limit	: 15 %(V)
Vapour pressure	: < 0.1 hPa at 20 °C
Relative vapour density	: no data available
Density	: 998 kg/m <sup>3</sup> at 20 °C
Relative density	: ca. 1.0 at 20 °C
Water solubility	: > 1,000 g/l at 20 °C Very soluble.
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: log Pow: -3.16
Auto-ignition temperature	: 330 °C
Decomposition temperature	: no data available
Viscosity, dynamic	: ca. 23 mPa.s at 20 °C



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- Viscosity, kinematic : ca. 23 mm<sup>2</sup>/s at 20 °C
- Explosive properties : Not explosive
- Oxidizing properties : The substance or mixture is not classified as oxidizing.

## 9.2 Other information

This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

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## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

Stable under normal conditions.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Heating can release hazardous gases.

### 10.4 Conditions to avoid

Conditions to avoid : Extremes of temperature and direct sunlight.

### 10.5 Incompatible materials

Materials to avoid : Reacts with copper, aluminium, zinc and their alloys.  
Strong acids and oxidizing agents  
Halogenated compounds

### 10.6 Hazardous decomposition products

Hazardous decomposition products : nitrogen oxides (NO<sub>x</sub>)

Thermal decomposition : no data available

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## SECTION 11: TOXICOLOGICAL INFORMATION

### Product information:

#### Hazard Summary

- Inhalation : Inhalation of aerosols may cause irritation to mucous membranes.  
Thermal decomposition can lead to release of irritating gases and vapours.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin : Symptoms may be delayed.  
Harmful in contact with skin.  
May cause an allergic skin reaction.  
Causes severe skin burns.

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Eyes : Causes serious eye damage.

Ingestion : Harmful if swallowed.  
Causes burns.  
May be harmful if swallowed.

## **Toxicology Assessment**

Further information : No further data available.

### **11.1 Information on toxicological effects**

#### **Toxicology data for the components:**

##### **Test result**

##### **Tetraethylenepentamine**

Acute oral toxicity : LD50: > 2,000 - 5,000 mg/kg  
Species: rat

Acute dermal toxicity : LD50: > 1,000 - 2,000 mg/kg  
Species: rabbit

Skin irritation : Species: rabbit  
Result: Causes burns.  
Method: OECD Test Guideline 404

Sensitisation : Species: guinea pig  
Result: May cause sensitisation by skin contact.

Germ cell mutagenicity

Genotoxicity in vivo : Result:  
No evidence of genotoxic effects in vivo.

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## **SECTION 12: ECOLOGICAL INFORMATION**

### **Product information:**

#### **Ecotoxicology Assessment**

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

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

### **12.1 Toxicity**

#### **Components:**

#### **Ecotoxicology Assessment**

##### **Tetraethylenepentamine**

Results of PBT assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic)  
This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

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## Test result

### Tetraethylenepentamine

- Toxicity to fish : LC50: > 100 mg/l  
Exposure time: 96 h  
Species: Poecilia reticulata (guppy)
- Toxicity to daphnia and other aquatic invertebrates : EC50: > 10 - 100 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)
- Toxicity to algae : EC50: > 1 - 10 mg/l  
Exposure time: 72 h  
Species: Pseudokirchneriella subcapitata (green algae)

## 12.2 Persistence and degradability

### Components:

#### Tetraethylenepentamine

- Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301D

## 12.3 Bioaccumulative potential

### Components:

#### Tetraethylenepentamine

- Bioaccumulation : Does not bioaccumulate.

## 12.4 Mobility in soil

### Components:

#### Tetraethylenepentamine

- Mobility : immobile

## 12.5 Results of PBT and vPvB assessment

### Product information:

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

### Components:

#### Tetraethylenepentamine

- PBT and vPvB assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic)  
This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

## 12.6 Other adverse effects

### Components:

#### Tetraethylenepentamine

- Biochemical Oxygen Demand (BOD) : no data available

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## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

- Product : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Hazardous waste  
Dispose of contents/container in accordance with local regulation.
- Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.

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## SECTION 14: TRANSPORT INFORMATION

### 14.1 UN number

- ADR : UN 2320  
RID : UN 2320  
IMDG-Code : UN 2320  
IATA-DGR : UN 2320

### 14.2 Proper shipping name

- ADR : TETRAETHYLENE-PENTAMINE  
RID : TETRAETHYLENE-PENTAMINE  
IMDG-Code : TETRAETHYLENEPENTAMINE  
IATA-DGR : Tetraethylenepentamine

### 14.3 Transport hazard class

- ADR : 8  
RID : 8  
IMDG-Code : 8  
IATA-DGR : 8

### 14.4 Packing group

- ADR  
Packing group : III  
Classification Code : C7  
Hazard Identification Number : 80  
Labels : 8  
Tunnel restriction code : (E)
- RID  
Packing group : III  
Classification Code : C7  
Hazard Identification Number : 80  
Labels : 8
- IMDG-Code  
Packing group : III  
Labels : 8  
EmS Code : F-A, S-B
- IATA-DGR  
Packing instruction (cargo aircraft) : 856

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Packing instruction : 852  
(passenger aircraft)  
Packing instruction (LQ) : Y841  
Packing group : III  
Labels : 8

## 14.5 Environmental hazards

### ADR

Environmentally hazardous : yes

### RID

Environmentally hazardous : yes

### IMDG-Code

Marine pollutant : yes

### IATA-DGR

Environmentally hazardous : yes

## 14.6 Special precautions for user

not applicable

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

Not applicable for product as supplied.

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## SECTION 15: REGULATORY INFORMATION

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

Major Accident Hazard : 96/82/EC  
Legislation : Dangerous for the environment  
9b  
Quantity 1: 200 t  
Quantity 2: 500 t

Water contaminating class : WGK 2 water endangering  
(Germany)

#### Notification status

CH INV : YES. On the inventory, or in compliance with the inventory  
TSCA : YES. All chemical substances in this product are either listed on the  
TSCA Inventory or in compliance with a TSCA Inventory exemption.  
DSL : YES. All components of this product are on the Canadian DSL.  
AICS : YES. On the inventory, or in compliance with the inventory  
NZIoC : YES. On the inventory, or in compliance with the inventory  
ENCS : YES. On the inventory, or in compliance with the inventory  
ISHL : YES. On the inventory, or in compliance with the inventory  
KECI : YES. On the inventory, or in compliance with the inventory  
PICCS : YES. On the inventory, or in compliance with the inventory  
IECSC : YES. On the inventory, or in compliance with the inventory

For explanation of abbreviation see section 16.

#### Further information

This product is to be considered as a substance according to EU-legislation.

### 15.2 Chemical Safety Assessment

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

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## SECTION 16: OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.

### Full text of R-phrases referred to under sections 2 and 3

R21/22	Harmful in contact with skin and if swallowed.
R34	Causes burns.
R43	May cause sensitisation by skin contact.
R51	Toxic to aquatic organisms.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.

### Explanations for possible abbreviations mentioned in section 2

PBT	: PBT: Persistent, bioaccumulative and toxic.
vPvB	: vPvB: Very persistent and very bioaccumulative.
OEL	: OEL: Occupational exposure limit.

### Notification status explanation

CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances (METI)
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

### Further information

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## Annex :

**Intermediate**

**Industrial formulation**

**Manufacture of Coatings, adhesives and inks (and powder products)**

**Diesel and gasoline additive**

**Diesel and gasoline additive**

**Industrial use of Coatings and Adhesives**

**Ashless dispersant, Processing aid**

**Corrosion inhibitor**

**Use in electroplating**

- **Lube oil, Metal working fluids**
- **Professional use of coatings & adhesives**
- **Epoxy, Polyurethane Curing Agent**
- **Consumer use**

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## 1. Short title of Exposure Scenario: Intermediate

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
<b>Process categories</b>	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent

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

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### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 4650 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 100 %
<b>Maximum daily site tonnage (kg/day):</b>	: 15500 kg/day

### Environment factors not influenced by risk management

<b>Flow rate</b>	: 83,333.3 m <sup>3</sup> /h
<b>Dilution Factor (River)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 300
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0.048 ppm
<b>Emission or Release Factor: Soil</b>	: 0.01 %
<b>Provide, with either onsite or</b>	: > 37.4 %



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domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

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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, Continuous process, Bulk product storage, (closed 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

Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 300 days/year

Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

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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, Process sampling

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

Frequency and duration of use

Exposure duration : < 240 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 300 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : General exposures (closed 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

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 300 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : 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).

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 300 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**  
**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 2.6 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 : 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**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 300 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**  
**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure):**

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90 %)

---

## 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** : 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

**Frequency and duration of use**

**Exposure duration** : < 60 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 300 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**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

**Frequency and duration of use**

**Exposure duration** : < 240 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 300 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

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## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility  
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

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 300 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : Laboratory 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

## Frequency and duration of use

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Exposure duration : 15 - 60 min  
 Remarks : Inhalation, Dermal  
 Frequency of use : <= 300 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6a	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0.0002 mg/L	< 0.0001
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.06 mg/m3	0.0609
			Long term dermal	0.007 mg/kg bw/day	0.012
			Short term	0.12 mg/m3	< 0.0001

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			inhalation		
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0027 mg/kg bw/day	0.0048
			Short term inhalation	0.73 mg/m3	0.0001
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m3	0.183
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	0.36 mg/m3	< 0.0001
PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m3	0.0001
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.6 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.37 mg/m3	0.3656
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.74 mg/m3	0.0001
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.548 mg/m3	0.5484
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated	Long term inhalation	0.3 mg/m3	0.3

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		differently).			
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m <sup>3</sup>	0.0001
PROC15	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.596 mg/m <sup>3</sup>	0.596
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	1.2 mg/m <sup>3</sup>	0.0002

**ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)**

**PROC1: Use in closed process, no likelihood of exposure**

**PROC15: Use as laboratory reagent**

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

**PROC3: Use in closed batch process (synthesis or formulation)**

**PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)



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## 1. Short title of Exposure Scenario: Industrial formulation

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC2: Formulation of preparations
<b>Process categories</b>	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent

---

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

---

### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 2320 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 100 %
<b>Maximum daily site tonnage (kg/day):</b>	: 10300 kg/day

### Environment factors not influenced by risk management

<b>Flow rate</b>	: 83,333.3 m <sup>3</sup> /h
<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 225
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %

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Remarks : SpERC: CEPE 2.1b.v1  
Remarks : No waste water is released to the environment

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

---

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

---

Activity : General exposures, Continuous process, Bulk product storage, (closed 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

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : General exposures, Process sampling

### 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

### Frequency and duration of use

Exposure duration : < 240 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

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**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : General exposures (closed 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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (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

---

Activity	: 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
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)	
Organisational measures to prevent /limit releases, dispersion and exposure	
Assumes a good basic standard of occupational hygiene is implemented.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)	
Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)	

---

## 2.6 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	: 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
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	

---

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**Outdoor / Indoor : Indoor**

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 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 : 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**

### Frequency and duration of use

**Exposure duration : < 60 min**

**Remarks : Inhalation, Dermal**

**Frequency of use : <= 225 days/year**

### Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

### Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

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

---

<b>Activity</b>	: Bulk transfers, Dedicated facility
<b>Product characteristics</b>	
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
<b>Frequency and duration of use</b>	
Exposure duration	: < 240 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
<b>Human factors not influenced by risk management</b>	
Breathing volume	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
Outdoor / Indoor	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)	

---

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

---

<b>Activity</b>	: Material transfers, Bulk transfers, Dedicated facility
<b>Product characteristics</b>	
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
<b>Frequency and duration of use</b>	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
<b>Human factors not influenced by risk management</b>	
Breathing volume	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
Outdoor / Indoor	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)	

---

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%)

**Organisational measures to prevent /limit releases, dispersion and exposure**  
Assumes a good basic standard of occupational hygiene is implemented.

**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)  
Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

**Activity** : Laboratory 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

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

**Organisational measures to prevent /limit releases, dispersion and exposure**  
Assumes a good basic standard of occupational hygiene is implemented.

**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.11 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** : Mixing operations (open systems)  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

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

**Assumes a good basic standard of occupational hygiene is implemented.**

## 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): 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 : Material transfers**  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)**

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

**Assumes a good basic standard of occupational hygiene is implemented.**

## 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): 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

---

Activity : Drum and small package filling  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

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## 2.15 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	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

---

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

---

Activity	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	
Assumes a good basic standard of occupational hygiene is implemented.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)	

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## 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	: Drum and small package filling
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

---

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

---

Activity	: Material transfers, Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

---

## 3. Exposure estimation and reference to its source

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Environment

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.06 mg/m <sup>3</sup>	0.0609
			Long term dermal	0.007 mg/kg bw/day	0.012
			Short term inhalation	0.12 mg/m <sup>3</sup>	< 0.0001
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m <sup>3</sup>	0.357
			Long term dermal	0.0027 mg/kg bw/day	0.0048
			Short term inhalation	0.73 mg/m <sup>3</sup>	0.0001
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m <sup>3</sup>	0.183
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	0.36 mg/m <sup>3</sup>	< 0.0001
PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m <sup>3</sup>	0.3046

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			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m3	0.0001
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.6 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.37 mg/m3	0.3656
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.74 mg/m3	0.0001
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.548 mg/m3	0.5484
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m3	0.0001
PROC15	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.596 mg/m3	0.596
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	1.2 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m3	0.119

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			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	0.243 mg/m3	0.0004
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.002 mg/kg bw/day	0.005
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.0137 mg/kg bw/day	0.024
			Short term inhalation	1.22 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m3	0.297
			Long term dermal	0.014 mg/kg bw/day	0.0241
			Short term inhalation	1.52 mg/m3	0.0003
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12

**ERC2: Formulation of preparations**

**PROC1: Use in closed process, no likelihood of exposure**

**PROC15: Use as laboratory reagent**

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

**PROC3: Use in closed batch process (synthesis or formulation)**

**PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Manufacture of Coatings, adhesives and inks (and powder products)

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC2: Formulation of preparations
<b>Process categories</b>	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent

---

## 2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC6a: Manufacture of substances, Formulation of preparations, Industrial use resulting in manufacture of another substance (use of intermediates)

---

### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 1210 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 100 %
<b>Maximum daily site tonnage (kg/day):</b>	: 21500 kg/day

### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 225
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 50 ppm



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Emission or Release Factor: Soil : 0 %  
Remarks : SpERC: CEPE 2.2a.v1  
Provide, with either onsite or : > 37.4 %  
domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

---

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

---

Activity : General exposures, Continuous process, Bulk product storage, (closed systems)

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

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Technical conditions and measures  
Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation  
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : General exposures, Process sampling

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

Frequency and duration of use  
Exposure duration : < 240 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : General exposures (closed 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

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)  
Wear a respirator conforming to EN140 with Type A filter or better. (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

---

**Activity** : 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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.6 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** : 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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

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**Breathing volume : 10 m3/day**

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor : Indoor**

**Technical conditions and measures**

**Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)**

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

**Assumes a good basic standard of occupational hygiene is implemented.**

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

**Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 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 : 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**

**Frequency and duration of use**

**Exposure duration : < 60 min**

**Remarks : Inhalation, Dermal**

**Frequency of use : <= 225 days/year**

**Human factors not influenced by risk management**

**Breathing volume : 10 m3/day**

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor : Indoor**

**Technical conditions and measures**

**Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)**

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

**Assumes a good basic standard of occupational hygiene is implemented.**

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

**Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure):**

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95 %)

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

---

**Activity** : Bulk transfers, Dedicated facility

**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

**Frequency and duration of use**

**Exposure duration** : < 240 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility

**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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

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**Outdoor / Indoor : Indoor**

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

**Activity : Laboratory 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**

### Frequency and duration of use

**Exposure duration : 15 - 60 min**

**Remarks : Inhalation, Dermal**

**Frequency of use : <= 225 days/year**

### Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

### Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.11 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** : **Mixing operations (open systems)**  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : **Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use)** : **liquid**

**Frequency and duration of use**  
**Exposure duration** : **< 480 min**  
**Remarks** : **Inhalation, Dermal**  
**Frequency of use** : **<= 225 days/year**

**Human factors not influenced by risk management**  
**Breathing volume** : **10 m3/day**

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : **Indoor**

**Organisational measures to prevent /limit releases, dispersion and exposure**  
**Assumes a good basic standard of occupational hygiene is implemented.**

**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): 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** : **Material transfers**  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : **Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use)** : **liquid**

**Frequency and duration of use**  
**Exposure duration** : **< 480 min**  
**Remarks** : **Inhalation, Dermal**  
**Frequency of use** : **<= 225 days/year**

**Human factors not influenced by risk management**  
**Breathing volume** : **10 m3/day**

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : **Indoor**

**Technical conditions and measures**  
**Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)**

**Organisational measures to prevent /limit releases, dispersion and exposure**  
**Assumes a good basic standard of occupational hygiene is implemented.**

**Conditions and measures related to personal protection, hygiene and health evaluation**  
**Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.**

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(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 : Drum and small package filling

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Assumes a good basic standard of occupational hygiene is implemented.



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## 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): 90 %)

---

### 2.15 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 : Mixing operations (open systems)  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year  
Human factors not influenced by risk management  
Breathing volume : 10 m3/day  
Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure  
Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year  
Human factors not influenced by risk management  
Breathing volume : 10 m3/day  
Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure  
Assumes a good basic standard of occupational hygiene is implemented.

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Conditions and measures related to personal protection, hygiene and health evaluation  
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 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 : Drum and small package filling  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure  
Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure  
Assumes a good basic standard of occupational hygiene is implemented.

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## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	EUSES		Fresh water		0.0005 mg/L	0.077
			Fresh water sediment		0.263 mg/kg dry weight	0.187
			Marine water		0.0001 mg/L	0.077
			Marine sediment		0.064 mg/kg dry weight	0.187
			Sewage treatment plant		0.084 mg/L	0.0086
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.06 mg/m3	0.0609
			Long term dermal	0.007 mg/kg bw/day	0.012
			Short term inhalation	0.12 mg/m3	< 0.0001
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0027 mg/kg bw/day	0.0048
			Short term inhalation	0.73 mg/m3	0.0001
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m3	0.183
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	0.36 mg/m3	< 0.0001

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PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m3	0.0001
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.6 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.37 mg/m3	0.3656
			Long term dermal	0.27 mg/kg bw/day	0.4812
			Short term inhalation	0.74 mg/m3	0.0001
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.548 mg/m3	0.5484
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3
			Long term dermal	0.14 mg/kg bw/day	0.2406
			Short term inhalation	0.62 mg/m3	0.0001
PROC15	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.596 mg/m3	0.596
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	1.2 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.61
			Long term dermal	0.0274 mg/kg bw/day	0.0481

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			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	0.0004
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6039
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12

**ERC2: Formulation of preparations**

**PROC1: Use in closed process, no likelihood of exposure**

**PROC15: Use as laboratory reagent**

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

**PROC3: Use in closed batch process (synthesis or formulation)**

**PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Diesel and gasoline additive

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

---

**2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC10b: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)**

---

### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 465 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 0.05 %
<b>Maximum daily site tonnage (kg/day):</b>	: 0.637 kg/day

### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 365
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %
<b>Remarks</b>	: spERC: ESVOC SpERC 9.12b v1
<b>Remarks</b>	: No waste water is released to the environment

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## 2.2 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** : Mixing operations (open systems)  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**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): 90 %)

---

## 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

---

**Activity** : Material transfers  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90



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%)

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): 90 %)

---

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

---

Activity : Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance : Covers percentage substance in the product up to 2%.  
in Mixture/Article  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Technical conditions and measures  
Assumes a good basic standard of occupational hygiene is implemented.

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): 90 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance : Covers percentage substance in the product up to 2%.  
in Mixture/Article  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

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Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 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): 90 %)

---

## 2.6 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

---

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 2%.  
in Mixture/Article  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 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)

---

Activity : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 0.5%.  
in Mixture/Article  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 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	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)	

---

## 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	: Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Assumes a good basic standard of occupational hygiene is implemented.	

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

**Activity** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

## 2.11 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
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ERC4	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m3	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m3	0.002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC16	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.12 mg/m3	0.12
			Long term dermal	0.0069 mg/kg bw/day	0.002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term	0.0686	0.12

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			dermal	mg/kg bw/day	
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
			Short term inhalation	0.609 mg/m <sup>3</sup>	0.005
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC16	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.015 mg/m <sup>3</sup>	0.015
			Long term dermal	0.014 mg/kg bw/day	0.024

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

# TETRAETHYLENEPENTAMINE (TEPA)

Version 1

Revision Date 10.12.2013

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GB / EN

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## 1. Short title of Exposure Scenario: Diesel and gasoline additive

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<b>Main User Groups</b>	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental Release Categories</b>	: ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
<b>Process categories</b>	: PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

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**2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC10b: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)**

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### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 465 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 0.05 %
<b>Maximum daily site tonnage (kg/day):</b>	: 0.637 kg/day

### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 365
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %
<b>Remarks</b>	: spERC: ESVOC SpERC 9.12b v1
<b>Remarks</b>	: No waste water is released to the environment

### Technical conditions and measures / Organizational measures

<b>Exposure time</b>	: Continuous use/release
<b>Compartment</b>	: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

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## 2.2 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	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)	

---

## 2.3 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

---

Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Assumes a good basic standard of occupational hygiene is implemented.	

---

## 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

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Activity	: Material transfers
Product characteristics	

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 220 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.5 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

---

### Product characteristics

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

### Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 220 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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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	Level of Exposure	RCR
ERC10b	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064

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			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	1.2 mg/m <sup>3</sup>	0.004
PROC16	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.12 mg/m <sup>3</sup>	0.12
			Long term dermal	0.0069 mg/kg bw/day	0.002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m <sup>3</sup>	0.76
			Long term dermal	0.0137 mg/kg bw/day	0.024
			Short term inhalation	1.52 mg/m <sup>3</sup>	0.001
PROC16	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.015 mg/m <sup>3</sup>	0.015
			Long term dermal	0.014 mg/kg bw/day	0.024

ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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

For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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Version 1

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## 1. Short title of Exposure Scenario: Industrial use of Coatings and Adhesives

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

---

#### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 465 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 100 %
<b>Maximum daily site tonnage (kg/day):</b>	: 2114 kg/day

#### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

#### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 220
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %
<b>Remarks</b>	: No waste water is released to the environment

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## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

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## 2.2 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 : Mixing operations (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  
Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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

---

Activity : 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  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

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**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

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

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 240 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**  
**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 2.6 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 : Mixing operations (open systems)**

## Product characteristics

**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

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## 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

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Activity	: Calendering (including Banburys)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)	

---

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

---

Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Provide extraction ventilation at points where emissions occur. (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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)	

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**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 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** : Material transfers  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

---

## 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** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor



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## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Roller, spreader, flow application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

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**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

**Frequency and duration of use**

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

**Human factors not influenced by risk management**

Breathing volume : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.14 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

**Frequency and duration of use**

Exposure duration : < 480 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.15 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 2%  
in Mixture/Article

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 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): 90 %)

---

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

---

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 2%  
in Mixture/Article

Physical Form (at time of use) : liquid

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## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (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): 90 %)

---

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

---

Activity : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

---

## 2.18 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** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**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): 90 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**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): 90 %)

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at 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): 90 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

---

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Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.23 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

### Product characteristics

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Material transfers  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**



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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.

Physical Form (at time of use) : liquid

#### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

### 2.30 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.

Physical Form (at time of use) : liquid

#### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m <sup>3</sup>	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548
			Long term dermal	0.034 mg/kg bw/day	0.0602

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			Short term inhalation	1.098 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m <sup>3</sup>	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m <sup>3</sup>	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m <sup>3</sup>	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m <sup>3</sup>	0.536
			Long term dermal	0.008 mg/kg bw/day	0.014
PROC13	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/kg bw/day	0.5484
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722

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			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m <sup>3</sup>	0.018
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m <sup>3</sup>	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term	0.686 mg/kg	0.12

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			dermal	bw/day	
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m <sup>3</sup>	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

ERC5: Industrial use resulting in inclusion into or onto a matrix

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

PROC6: Calendering operations

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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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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**For further information, please also consult our Internet site: Downstream Users**  
**[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)**

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## 1. Short title of Exposure Scenario: Ashless dispersant, Processing aid

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

---

#### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 1210 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 100 %
<b>Maximum daily site tonnage (kg/day):</b>	: 4033 kg/day

#### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

#### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 300
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %
<b>Remarks</b>	: No waste water is released to the environment



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## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

---

## 2.2 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 : Mixing operations (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  
Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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

---

Activity : 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  
Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

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**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

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

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 240 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**  
**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 2.6 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 : Mixing operations (open systems)**

## Product characteristics

**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

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## 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

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Activity	: Calendering (including Banburys)
<b>Product characteristics</b>	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%
Physical Form (at time of use)	: liquid
<b>Frequency and duration of use</b>	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
<b>Human factors not influenced by risk management</b>	
Breathing volume	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
Outdoor / Indoor	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)	

---

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

---

<b>Product characteristics</b>	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%
Physical Form (at time of use)	: liquid
<b>Frequency and duration of use</b>	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
<b>Human factors not influenced by risk management</b>	
Breathing volume	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
Outdoor / Indoor	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)	

---

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**Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)**

---

## 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** : Material transfers  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

---

## 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** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

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## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Roller, spreader, flow application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

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**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.

Physical Form (at time of use) : liquid

**Frequency and duration of use**

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

**Human factors not influenced by risk management**

Breathing volume : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.14 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

**Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.

Physical Form (at time of use) : liquid

**Frequency and duration of use**

Exposure duration : < 480 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.15 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 2%  
in Mixture/Article

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 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): 90 %)

---

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

---

### Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 2%  
in Mixture/Article

Physical Form (at time of use) : liquid



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## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (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): 90 %)

---

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

---

Activity : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

---

## 2.18 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** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**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): 90 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**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): 90 %)

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at 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): 90 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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

---

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Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.23 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

### Product characteristics

---

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Material transfers  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.30 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m <sup>3</sup>	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548
			Long term dermal	0.034 mg/kg bw/day	0.0602



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			Short term inhalation	1.098 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m <sup>3</sup>	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m <sup>3</sup>	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m <sup>3</sup>	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m <sup>3</sup>	0.536
			Long term dermal	0.008 mg/kg bw/day	0.014
PROC13	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/kg bw/day	0.5484
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722

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			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m <sup>3</sup>	0.018
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m <sup>3</sup>	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term	0.686 mg/kg	0.12

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			dermal	bw/day	
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m <sup>3</sup>	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

ERC5: Industrial use resulting in inclusion into or onto a matrix

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

PROC6: Calendering operations

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

---

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

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**For further information, please also consult our Internet site: Downstream Users**  
**[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)**

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## 1. Short title of Exposure Scenario: Corrosion inhibitor

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

---

#### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 232 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 5 %
<b>Maximum daily site tonnage (kg/day):</b>	: 38.7 kg/day

#### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

#### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 300
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 1 %
<b>Emission or Release Factor: Soil</b>	: 0.1 %
<b>Provide, with either onsite or</b>	: > 37.4 %

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domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

---

## 2.2 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 : Mixing operations (open systems)  
Product characteristics  
Concentration of the Substance : Covers the percentage of the substance in the product up  
in Mixture/Article to 25 %.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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

---

Activity : Material transfers  
Product characteristics  
Concentration of the Substance : Covers the percentage of the substance in the product up  
in Mixture/Article to 25 %.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal

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Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Bulk transfers, Dedicated facility

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

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

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## 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

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.6 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 : Mixing operations (open systems)

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management

---



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supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

---

**Activity** : Calendering (including Banburys)

**Product characteristics**

- Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%
- Physical Form (at time of use)** : liquid

**Frequency and duration of use**

- Exposure duration** : < 480 min
- Remarks** : Inhalation, Dermal
- Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

- Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

- Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Product characteristics**

- Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%
- Physical Form (at time of use)** : liquid

**Frequency and duration of use**

- Exposure duration** : < 480 min
- Remarks** : Inhalation, Dermal
- Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

- Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

- Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 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 : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Technical conditions and measures  
Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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 : Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management

---

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**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : 60 - 240 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

#### Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

### 2.14 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

#### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 240 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

---

## 2.15 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 : Mixing operations (open systems)**

## Product characteristics

**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Assumes a good basic standard of occupational hygiene is implemented.**

## 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): 90 %)**

---

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

---

## Product characteristics

---

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (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): 90 %)

---

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

---

**Activity** : Material transfers

## Product characteristics

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

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---

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

---

**Activity** : Roller, spreader, flow application

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)



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%)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.23 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Material transfers

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.26 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** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Roller, spreader, flow application

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

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## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.30 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0006 mg/L	0.082
			Fresh water sediment		0.282 mg/kg dry weight	0.082
			Marine water		0.0002 mg/L	0.347
			Marine sediment		0.119 mg/kg dry weight	0.347
			Sewage treatment plant		0.121 mg/L	0.013
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m <sup>3</sup>	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548

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		to 25 %.	Long term dermal	0.034 mg/kg bw/day	0.0602
			Short term inhalation	1.098 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m3	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m3	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m3	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m3	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m3	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m3	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m3	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m3	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m3	0.536
			Long term dermal	0.008 mg/kg bw/day	0.014
PROC13	ECETOC TRA	Covers percentage substance	Long term	0.548 mg/kg	0.5484

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		in the product up to 15%.	inhalation	bw/day	
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m <sup>3</sup>	0.018
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m <sup>3</sup>	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12

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PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.686 mg/kg bw/day	0.12
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m <sup>3</sup>	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

**ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

**ERC5: Industrial use resulting in inclusion into or onto a matrix**

**PROC10: Roller application or brushing**

**PROC13: Treatment of articles by dipping and pouring**

**PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC6: Calendaring operations**

**PROC7: Industrial spraying**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**



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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Use in electroplating

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

---

#### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 46.5 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 0.5 %
<b>Maximum daily site tonnage (kg/day):</b>	: 77.5 kg/day

#### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

#### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 300
<b>Emission or Release Factor: Air</b>	: 0.05 %
<b>Emission or Release Factor: Water</b>	: 0.5 %
<b>Emission or Release Factor: Soil</b>	: 1 %
<b>Provide, with either onsite or</b>	: > 37.4 %

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domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

---

## 2.2 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 : Mixing operations (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

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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

---

Activity : 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

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal

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Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Bulk transfers, Dedicated facility

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

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

---

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## 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

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.6 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 : Mixing operations (open systems)

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management

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supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

---

**Activity** : Calendering (including Banburys)  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 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 : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Technical conditions and measures  
Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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 : Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management

---

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**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : 60 - 240 min



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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.14 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 240 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

---

## 2.15 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 : Mixing operations (open systems)**

## Product characteristics

**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Assumes a good basic standard of occupational hygiene is implemented.**

## 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): 90 %)**

---

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

---

## Product characteristics

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (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): 90 %)

---

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

---

**Activity** : Material transfers

## Product characteristics

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

---

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

---

Activity : Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

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

---

<b>Activity</b>	: Roller, spreader, flow application
<b>Product characteristics</b>	
<b>Concentration of the Substance in Mixture/Article</b>	: Covers percentage substance in the product up to 2%.
<b>Physical Form (at time of use)</b>	: liquid
<b>Frequency and duration of use</b>	
<b>Exposure duration</b>	: < 480 min
<b>Remarks</b>	: Inhalation, Dermal
<b>Frequency of use</b>	: <= 240 days/year
<b>Human factors not influenced by risk management</b>	
<b>Breathing volume</b>	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
<b>Outdoor / Indoor</b>	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)	

---

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

---

<b>Activity</b>	: Treatment by dipping and pouring, Production of articles by dipping and pouring
<b>Product characteristics</b>	
<b>Concentration of the Substance in Mixture/Article</b>	: Covers percentage substance in the product up to 2%.
<b>Physical Form (at time of use)</b>	: liquid
<b>Frequency and duration of use</b>	
<b>Exposure duration</b>	: < 480 min
<b>Remarks</b>	: Inhalation, Dermal
<b>Frequency of use</b>	: <= 240 days/year
<b>Human factors not influenced by risk management</b>	
<b>Breathing volume</b>	: 10 m3/day
<b>Other operational conditions affecting workers exposure</b>	
<b>Outdoor / Indoor</b>	: Indoor
<b>Technical conditions and measures</b>	
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)	

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%)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.23 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Material transfers

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.26 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** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Roller, spreader, flow application

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

---



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## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.30 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0006 mg/L	0.082
			Fresh water sediment		0.282 mg/kg dry weight	0.082
			Marine water		0.0002 mg/L	0.347
			Marine sediment		0.119 mg/kg dry weight	0.347
			Sewage treatment plant		0.121 mg/L	0.013
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m <sup>3</sup>	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548

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		to 25 %.	Long term dermal	0.034 mg/kg bw/day	0.0602
			Short term inhalation	1.098 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m3	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m3	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m3	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m3	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m3	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m3	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m3	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m3	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m3	0.536
			Long term dermal	0.008 mg/kg bw/day	0.014
PROC13	ECETOC TRA	Covers percentage substance	Long term	0.548 mg/kg	0.5484

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		in the product up to 15%.	inhalation	bw/day	
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m <sup>3</sup>	0.018
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m <sup>3</sup>	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12

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PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.686 mg/kg bw/day	0.12
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m <sup>3</sup>	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

**ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

**ERC5: Industrial use resulting in inclusion into or onto a matrix**

**PROC10: Roller application or brushing**

**PROC13: Treatment of articles by dipping and pouring**

**PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC6: Calendaring operations**

**PROC7: Industrial spraying**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Lube oil, Metal working fluids

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<b>Main User Groups</b>	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>Environmental Release Categories</b>	: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

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### 2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

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#### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 1210 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 2.1 %
<b>Maximum daily site tonnage (kg/day):</b>	: 115 kg/day

#### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

#### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 220
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0.1 %
<b>Emission or Release Factor: Soil</b>	: 0.1 %
<b>Provide, with either onsite or</b>	: > 37.4 %

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domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

---

## 2.2 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 : Mixing operations (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

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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

---

Activity : 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

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal



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Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Bulk transfers, Dedicated facility

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

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Material transfers, Bulk transfers, Dedicated facility

---

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## 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

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.6 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 : Mixing operations (open systems)

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management

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supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

---

**Activity** : Calendering (including Banburys)

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 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 : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

Technical conditions and measures  
Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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 : Bulk transfers, Dedicated facility  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

Human factors not influenced by risk management

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**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m<sup>3</sup>/day

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**

**Exposure duration** : 60 - 240 min

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Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.14 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%

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

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 240 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)**

---

## 2.15 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 : Mixing operations (open systems)**

## Product characteristics

**Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.**  
**Physical Form (at time of use) : liquid**

## Frequency and duration of use

**Exposure duration : < 480 min**  
**Remarks : Inhalation, Dermal**  
**Frequency of use : <= 225 days/year**

## Human factors not influenced by risk management

**Breathing volume : 10 m3/day**

## Other operational conditions affecting workers exposure

**Outdoor / Indoor : Indoor**

## Technical conditions and measures

**Assumes a good basic standard of occupational hygiene is implemented.**

## 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): 90 %)**

---

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

---

## Product characteristics

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**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (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): 90 %)

---

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

---

**Activity** : Material transfers

## Product characteristics

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

## Frequency and duration of use

**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

## Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

## Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 90 %)



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

---

**Activity** : Material transfers, Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

---

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

---

**Activity** : Bulk transfers, Dedicated facility  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : < 480 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 225 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

### 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): 90 %)

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

---

**Activity** : Roller, spreader, flow application

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at 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): 90 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 2%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 240 days/year

### Human factors not influenced by risk management

**Breathing volume** : 10 m3/day

### Other operational conditions affecting workers exposure

**Outdoor / Indoor** : Indoor

### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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%)

Conditions and measures related to personal protection, hygiene and health evaluation  
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.23 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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## **2.24 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

---

### **Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

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

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### **Human factors not influenced by risk management**

Breathing volume : 10 m3/day

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

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Material transfers

### **Product characteristics**

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

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

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 225 days/year

### **Human factors not influenced by risk management**

Breathing volume : 10 m3/day

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

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## **2.26 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** : Material transfers, Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Bulk transfers, Dedicated facility

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

**Frequency and duration of use**

**Exposure duration** : < 480 min

**Remarks** : Inhalation, Dermal

**Frequency of use** : <= 225 days/year

**Human factors not influenced by risk management**

**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**

**Outdoor / Indoor** : Indoor

**Technical conditions and measures**

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

**Activity** : Roller, spreader, flow application

**Product characteristics**

**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 0.5%

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

---

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## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.30 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

---

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0004 mg/L	0.070
			Fresh water sediment		0.239 mg/kg dry weight	0.070
			Marine water		0.0001 mg/L	0.148
			Marine sediment		0.051 mg/kg dry weight	0.148
			Sewage treatment plant		0.036 mg/L	0.0037
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m <sup>3</sup>	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m <sup>3</sup>	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m <sup>3</sup>	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.548 mg/m <sup>3</sup>	0.548

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		to 25 %.	Long term dermal	0.034 mg/kg bw/day	0.0602
			Short term inhalation	1.098 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m3	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m3	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m3	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m3	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m3	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m3	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m3	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m3	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m3	0.536
			Long term dermal	0.008 mg/kg bw/day	0.014
PROC13	ECETOC TRA	Covers percentage substance	Long term	0.548 mg/kg	0.5484



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		in the product up to 15%.	inhalation	bw/day	
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m <sup>3</sup>	0.018
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m <sup>3</sup>	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m <sup>3</sup>	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m <sup>3</sup>	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12

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PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.686 mg/kg bw/day	0.12
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m <sup>3</sup>	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m <sup>3</sup>	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m <sup>3</sup>	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

**ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

**ERC5: Industrial use resulting in inclusion into or onto a matrix**

**PROC10: Roller application or brushing**

**PROC13: Treatment of articles by dipping and pouring**

**PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

**PROC6: Calendaring operations**

**PROC7: Industrial spraying**

**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

**PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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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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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Professional use of coatings & adhesives

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<b>Main User Groups</b>	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental Release Categories</b>	: ERC8a, ERC8c, ERC8d, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles

---

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8c, ERC8d, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix**

---

### Amount used

Maximum daily site tonnage : 2.55 kg/day  
(kg/day):

### Environment factors not influenced by risk management

Dilution Factor (River) : 1,000  
Dilution Factor (Coastal Areas) : 1,000

### Other given operational conditions affecting environmental exposure

Number of emission days per year : 365  
Emission or Release Factor: Air : 0 %  
Emission or Release Factor: Water : 1 %

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Emission or Release Factor: Soil : 0.5 %  
Provide, with either onsite or : > 37.4 %  
domestic wastewater treatment,  
a total wastewater removal  
efficiency of (%)

## Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release  
Compartment : Fresh water, Fresh water sediment, Marine water, Marine  
sediment, Soil, Grassland, Sewage treatment plant

---

## 2.2 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 : Mixing operations (open systems)  
Product characteristics  
Concentration of the Substance : Covers the percentage of the substance in the product up  
in Mixture/Article to 25 %.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

## 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

---

Activity : Material transfers  
Product characteristics  
Concentration of the Substance : Covers the percentage of the substance in the product up  
in Mixture/Article to 25 %.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 15 min  
Remarks : Inhalation, Dermal

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Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Bulk transfers, Dedicated facility

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

Frequency and duration of use

Exposure duration : < 60 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.5 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 : Mixing operations (open systems)

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.

Physical Form (at time of use) : liquid

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## Frequency and duration of use

Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 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 : Material transfers  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : Bulk transfers, Dedicated facility

---

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## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

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

---

Activity : Roller, spreader, flow application

## Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 15%.  
Physical Form (at time of use) : liquid

## Frequency and duration of use

Exposure duration : 15 - 60 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)



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## 2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

**Activity** : Spraying, Manual  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 10%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)  
Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

**Activity** : Treatment by dipping and pouring, Production of articles by dipping and pouring  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 60 - 240 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

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## Technical conditions and measures

Provide extraction ventilation at 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 intensive management supervision controls. (Effectiveness (of a measure): 98 %)

---

## 2.11 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	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor

## Technical conditions and measures

Provide extraction ventilation at 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): 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	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (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 : Material transfers, Bulk transfers, Dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : Roller, spreader, flow application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

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## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.15 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

Activity : Spraying, Manual

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 60 - 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Provide extraction ventilation at 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 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

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Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide extraction ventilation at 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): 80 %)

---

## 2.17 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

---

Activity : Mixing operations (open systems), Preparation of material for application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

## 2.18 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles

---

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%

Physical Form (at time of use) : solid

Frequency and duration of use

Remarks : Inhalation, Dermal

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## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Operation and lubrication of high energy open equipment

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.

Physical Form (at time of use) : solid

### Frequency and duration of use

Remarks : Inhalation, Dermal

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.20 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 : Mixing operations (open systems)

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

## Human factors not influenced by risk management

Breathing volume : 10 m3/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

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

---

Activity	: Material transfers, Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk management	
Breathing volume	: 10 m3/day
Other operational conditions affecting workers exposure	
Outdoor / Indoor	: Indoor

## Technical conditions and measures

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Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Roller, spreader, flow application  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

---

## 2.24 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

Activity : Spraying, Manual  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.



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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

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

---

Activity : Treatment by dipping and pouring, Production of articles by dipping and pouring

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 2.26 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

---

Activity : Mixing operations (open systems), Preparation of material for application

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%

Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.27 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles

---

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%

Physical Form (at time of use) : solid

### Frequency and duration of use

Remarks : Inhalation, Dermal

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

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

---

Activity : Operation and lubrication of high energy open equipment

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%

Physical Form (at time of use) : solid

### Frequency and duration of use

Remarks : Inhalation, Dermal

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

---

## 3. Exposure estimation and reference to its source

---

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## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8a	EUSES		Fresh water		0.0004 mg/L	0.065
			Fresh water sediment		0.222 mg/kg dry weight	0.065
			Marine water		< 0.0001 mg/L	0.069
			Marine sediment		0.024 mg/kg dry weight	0.069
			Sewage treatment plant		0.0032 mg/L	0.0003
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m3	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.914 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.0068 mg/kg bw/day	0.012
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0082 mg/kg bw/day	0.014
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457

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			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.357 mg/m <sup>3</sup>	0.357
			Long term dermal	0.004 mg/kg bw/day	0.007
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.082 mg/kg bw/day	0.1444
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.121 mg/kg bw/day	0.1219
			Long term dermal	0.214 mg/m <sup>3</sup>	0.3759
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001
PROC13	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/kg bw/day	0.5484
			Long term dermal	0.0411 mg/m <sup>3</sup>	0.0722
			Short term inhalation	1.097 mg/m <sup>3</sup>	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.305 mg/m <sup>3</sup>	0.305
			Long term dermal	0.0548 mg/kg bw/day	0.0962
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m <sup>3</sup>	0.119
			Long term dermal	0.014 mg/kg bw/day	0.024
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.109 mg/kg bw/day	0.192
			Short term inhalation	0.609 mg/m <sup>3</sup>	< 0.0001
PROC11	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.146 mg/kg bw/day	0.146
			Long term dermal	0.214 mg/m <sup>3</sup>	0.3759
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001

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PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.238 mg/m <sup>3</sup>	0.238
			Long term dermal	0.011 mg/kg bw/day	0.019
PROC19	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.304 mg/m <sup>3</sup>	0.304
			Long term dermal	0.056 mg/kg bw/day	0.099
PROC21	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.06 mg/m <sup>3</sup>	0.06
			Long term dermal	0.0566 mg/kg bw/day	0.0992
			Short term inhalation	0.12 mg/m <sup>3</sup>	< 0.0001
PROC24	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.06 mg/m <sup>3</sup>	0.06
			Long term dermal	0.0566 mg/kg bw/day	0.0992
			Short term inhalation	0.12 mg/m <sup>3</sup>	< 0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m <sup>3</sup>	0.12
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m <sup>3</sup>	0.76
			Long term dermal	0.013 mg/kg bw/day	0.024
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m <sup>3</sup>	0.297
			Long term dermal	0.034 mg/kg bw/day	0.06
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m <sup>3</sup>	0.76
			Long term dermal	0.027 mg/kg bw/day	0.048
PROC11	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.3 mg/m <sup>3</sup>	0.3046
			Long term dermal	0.11 mg/kg bw/day	0.188
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0001
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m <sup>3</sup>	0.297
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC19	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.076 mg/m <sup>3</sup>	0.0762
			Long term dermal	0.14 mg/kg bw/day	0.2481
			Short term inhalation	1.52 mg/m <sup>3</sup>	< 0.0001

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PROC21	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.02 mg/m <sup>3</sup>	0.015
			Long term dermal	0.0141 mg/kg bw/day	0.0248
			Short term inhalation	0.03 mg/m <sup>3</sup>	< 0.0001
PROC24	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.02 mg/m <sup>3</sup>	0.015
			Long term dermal	0.0141 mg/kg bw/day	0.0248
			Short term inhalation	0.03 mg/m <sup>3</sup>	< 0.0001

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

ERC8d: Wide dispersive outdoor use of processing aids in open systems

ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC19: Hand-mixing with intimate contact and only PPE available

PROC21: Low energy manipulation of substances bound in materials and/ or articles

PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

---

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

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For further information, please also consult our Internet site: Downstream Users  
[http://guidance.echa.europa.eu/downstream\\_users\\_en.htm](http://guidance.echa.europa.eu/downstream_users_en.htm)

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## 1. Short title of Exposure Scenario: Epoxy, Polyurethane Curing Agent

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<b>Main User Groups</b>	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental Release Categories</b>	: ERC8b, ERC8c, ERC8e, ERC8f: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
<b>Process categories</b>	: PROC10: Roller application or brushing PROC11: Non industrial spraying

---

**2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8c, ERC8e, ERC8f: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix**

---

### Amount used

<b>Regional use tonnage (tonnes/year):</b>	: 1160 ton(s)/year
<b>Fraction of Regional tonnage used locally:</b>	: 3.8 %
<b>Maximum daily site tonnage (kg/day):</b>	: 200 kg/day

### Environment factors not influenced by risk management

<b>Dilution Factor (River)</b>	: 1,000
<b>Dilution Factor (Coastal Areas)</b>	: 1,000

### Other given operational conditions affecting environmental exposure

<b>Number of emission days per year</b>	: 220
<b>Emission or Release Factor: Air</b>	: 736 ppm
<b>Emission or Release Factor: Water</b>	: 0 %
<b>Emission or Release Factor: Soil</b>	: 0 %
<b>Remarks</b>	: No waste water is released to the environment

### Technical conditions and measures / Organizational measures

<b>Exposure time</b>	: Continuous use/release
<b>Compartment</b>	: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

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

---

**Activity** : Roller, spreader, flow application  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 15%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Assumes a good basic standard of occupational hygiene is implemented.

**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)  
Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

## 2.3 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

**Activity** : Spraying, Manual  
**Product characteristics**  
**Concentration of the Substance in Mixture/Article** : Covers percentage substance in the product up to 10%.  
**Physical Form (at time of use)** : liquid

**Frequency and duration of use**  
**Exposure duration** : 15 - 60 min  
**Remarks** : Inhalation, Dermal  
**Frequency of use** : <= 240 days/year

**Human factors not influenced by risk management**  
**Breathing volume** : 10 m3/day

**Other operational conditions affecting workers exposure**  
**Outdoor / Indoor** : Indoor

**Technical conditions and measures**  
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)



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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Roller, spreader, flow application  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

## 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): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

---

## 2.5 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

Activity : Spraying, Manual  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.  
Physical Form (at time of use) : liquid

Frequency and duration of use  
Exposure duration : < 240 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

Human factors not influenced by risk management  
Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure  
Outdoor / Indoor : Indoor

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## Technical conditions and measures

Provide extraction ventilation at 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 specific activity training. (Effectiveness (of a measure): 90 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

---

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

---

Activity : Roller, spreader, flow application  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

### Human factors not influenced by risk management

Breathing volume : 10 m3/day

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

## 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): 80 %)

---

## 2.7 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

Activity : Spraying, Manual  
Product characteristics  
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.5%.  
Physical Form (at time of use) : liquid

### Frequency and duration of use

Exposure duration : < 480 min  
Remarks : Inhalation, Dermal  
Frequency of use : <= 240 days/year

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## Human factors not influenced by risk management

Breathing volume : 10 m<sup>3</sup>/day

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## 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): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8b	EUSES		Fresh water		0.0004 mg/L	0.064
			Fresh water sediment		0.221 mg/kg dry weight	0.064
			Marine water		< 0.0001 mg/L	0.064
			Marine sediment		0.022 mg/kg dry weight	0.064
			Sewage treatment plant		0 mg/L	0
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m <sup>3</sup>	0.457
			Long term dermal	0.082 mg/kg bw/day	0.1444
			Short term inhalation	0.914 mg/m <sup>3</sup>	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 10%.	Long term inhalation	0.121 mg/kg bw/day	0.1219
			Long term dermal	0.214 mg/m <sup>3</sup>	0.3759
			Short term inhalation	0.243 mg/m <sup>3</sup>	< 0.0001

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PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m <sup>3</sup>	0.6093
			Long term dermal	0.109 mg/kg bw/day	0.194
			Short term inhalation	1.22 mg/m <sup>3</sup>	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/kg bw/day	0.1219
			Long term dermal	0.21 mg/m <sup>3</sup>	0.3759
			Short term inhalation	0.24 mg/m <sup>3</sup>	0.01
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m <sup>3</sup>	0.76
			Long term dermal	0.027 mg/kg bw/day	0.048
			Short term inhalation	1.52 mg/m <sup>3</sup>	0.002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.3 mg/m <sup>3</sup>	0.3046
			Long term dermal	0.11 mg/kg bw/day	0.188
			Short term inhalation	0.6 mg/m <sup>3</sup>	0.005

ERC8b: Wide dispersive indoor use of reactive substances in open systems

ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

ERC8e: Wide dispersive outdoor use of reactive substances in open systems

ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

PROC10: Roller application or brushing

PROC11: Non industrial spraying

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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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## 1. Short title of Exposure Scenario: Consumer use

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<b>Main User Groups</b>	: SU 21: Consumer uses: Private households (= general public = consumers)
<b>Environmental Release Categories</b>	: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
<b>Chemical product category</b>	: PC1: Adhesives, sealants PC9b: Fillers, putties, plasters, modelling clay

---

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix**

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### Amount used

**Maximum daily site tonnage (kg/day):** : 2.55 kg/day

### Environment factors not influenced by risk management

**Dilution Factor (River)** : 1,000  
**Dilution Factor (Coastal Areas)** : 1,000

### Other given operational conditions affecting environmental exposure

**Number of emission days per year** : 365  
**Emission or Release Factor: Air** : 0 %  
**Emission or Release Factor: Water** : 1 %  
**Emission or Release Factor: Soil** : 0.5 %  
**Remarks** : SpERC: CEPE 8f.1.v1  
**Remarks** : No waste water is released to the environment

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## 2.2 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

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<b>Activity</b>	: Mixing and loading
<b>Product characteristics</b>	
<b>Concentration of the Substance</b>	: Covers the percentage of the substance in the product up

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**in Mixture/Article** : to 25 %.  
**Physical Form (at time of use)** : liquid

## Amount used

**Amount used per event** : 20 gram  
**Remarks** : Inhalation  
**Amount used** : 0.05 gram  
**Remarks** : Dermal

## Frequency and duration of use

**Application duration** : 5 min  
**Exposure duration** : 5 min  
**Frequency of use** : 3 days/year  
**Remarks** : Inhalation, Dermal

## Human factors not influenced by risk management

**Dermal exposure** : 2 cm<sup>2</sup>

## Other given operational conditions affecting consumers exposure

**Outdoor / Indoor** : Indoor, Outdoor  
**Room size** : 1 m<sup>3</sup>  
**Ventilation rate per hour** : 0.6

## Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

**Consumer Measures** : Avoid using at a product concentration greater than 25%

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## 2.3 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

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**Activity** : Application  
**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

## Amount used

**Amount used per event** : 20 gram  
**Remarks** : Inhalation  
**Amount used** : 0.1 gram  
**Remarks** : Dermal

## Frequency and duration of use

**Application duration** : 30 min  
**Exposure duration** : 90 min  
**Frequency of use** : 3 days/year  
**Remarks** : Inhalation, Dermal

## Human factors not influenced by risk management

**Dermal exposure** : 43 cm<sup>2</sup>

## Other given operational conditions affecting consumers exposure

**Outdoor / Indoor** : Indoor, Outdoor  
**Room size** : 20 m<sup>3</sup>

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Ventilation rate per hour : 0.6

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures : Avoid using at a product concentration greater than 5%

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## 2.4 Contributing scenario controlling consumer exposure for: PC9b: Fillers, putties, plasters, modelling clay

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Activity : Mixing and loading  
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

Amount used  
Amount used per event : 200 gram  
Remarks : Inhalation  
Amount used : 0.02 gram  
Remarks : Dermal

Frequency and duration of use  
Application duration : 5 min  
Exposure duration : 5 min  
Frequency of use : 2 days/year  
Remarks : Inhalation, Dermal

Human factors not influenced by risk management  
Dermal exposure : 2 cm<sup>2</sup>

Other given operational conditions affecting consumers exposure  
Outdoor / Indoor : Indoor, Outdoor  
Room size : 1 m<sup>3</sup>  
Ventilation rate per hour : 0.6

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures : Avoid using at a product concentration greater than 25%

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## 2.5 Contributing scenario controlling consumer exposure for: PC9b: Fillers, putties, plasters, modelling clay

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Activity : Application  
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

Amount used  
Amount used per event : 200 gram

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Remarks : Inhalation  
 Amount used : 1 gram  
 Remarks : Dermal

## Frequency and duration of use

Application duration : 30 min  
 Exposure duration : 90 min  
 Frequency of use : 2 days/year  
 Remarks : Inhalation, Dermal

## Human factors not influenced by risk management

Dermal exposure : 22 cm<sup>2</sup>

## Other given operational conditions affecting consumers exposure

Outdoor / Indoor : Indoor, Outdoor  
 Room size : 20 m<sup>3</sup>  
 Ventilation rate per hour : 0.6

## Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Consumer Measures : Avoid using at a product concentration greater than 5%

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8a	EUSES		Fresh water		0.0004 mg/L	0.065
			Fresh water sediment		0.222 mg/kg dry weight	0.065
			Marine water		< 0.0001 mg/L	0.069
			Marine sediment		0.024 mg/kg dry weight	0.069
			Sewage treatment plant		0.0032 mg/L	0.0003
			Soil		0.077 mg/kg dry weight	0.113
			Grassland		0.077 mg/kg dry weight	0.113

### Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC1	"Consexpo"	Mixing and loading	Long term inhalation	0.039 mg/m <sup>3</sup>	0.17



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			Long term dermal	0.0002 mg/kg bw/day	< 0.001
			Short term inhalation	11.2 mg/m3	0.11
PC1	"Consexpo"	Application	Long term inhalation	0.188 mg/kg bw/day	0.82
			Long term dermal	0.0001 mg/m3	< 0.001
			Short term inhalation	3 mg/m3	0.03
PC9b	"Consexpo"	Mixing and loading	Long term inhalation	0.04 mg/m3	0.17
			Long term dermal	< 0.0001 mg/kg bw/day	< 0.001
			Short term inhalation	11.5 mg/m3	0.11
PC9b	"Consexpo"	Application	Long term inhalation	0.191 mg/kg bw/day	0.83
			Long term dermal	0.0001 mg/m3	< 0.001
			Short term inhalation	3.1 mg/m3	0.03

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8b: Wide dispersive indoor use of reactive substances in open systems

ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

ERC8d: Wide dispersive outdoor use of processing aids in open systems

ERC8e: Wide dispersive outdoor use of reactive substances in open systems

ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

PC1: Adhesives, sealants

PC9b: Fillers, putties, plasters, modelling clay

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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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