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

1.1 Product identifier

Trade name	:	Citric Acid Monohydrate
Substance name	:	Citric acid monohydrate
Molecular formula	:	C6H8O7 • H2O
Chemical identity	:	2-hydroxypropane-1,2,3-tricarboxylic acid hydrate
CAS-No.	:	5949-29-1
EC-No.	:	201-069-1
REACH No.	:	01-2119457026-42-0000

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

Use of the Substance/Mixture	:	Food/ feedstuff additives, Cosmetic additive, Medical aids, Industrial use, For further information see eSDS.
Recommended restrictions on use	:	None known.

1.3 Details of the supplier of the safety data sheet

Company	:	Jungbunzlauer Austria AG Werk Pernhofen 2064 Wulzeshofen Austria www.jungbunzlauer.com
Telephone	:	+43 2527 200-0
Telefax	:	+43 2527 200-80
Responsible/issuing person	:	msds@jungbunzlauer.com

1.4 Emergency telephone number

Telephone	:	National Chemical Emergency Centre (NCEC) +44 1865 407 333

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2	H319: Causes serious eye irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements :

Prevention:

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical nature : Solid

Chemical name	CAS-No. EC-No.	Concentration [%]
Hazardous components :		
Citric acid monohydrate	5949-29-1 201-069-1	100

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Get medical advice/ attention if you feel unwell.
Show this safety data sheet to the doctor in attendance.

If inhaled : If breathed in, move person into fresh air.

In case of skin contact : In case of contact, immediately flush skin with plenty of water.
Get medical attention if symptoms occur.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids.
If eye irritation persists, consult a specialist.

If swallowed	:	Drink plenty of water. If swallowed, DO NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	Severe eye irritation
Risks	:	Causes serious eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Water spray Dry powder Foam Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	Do not use a solid water stream as it may scatter and spread fire. Hazardous decomposition products formed under fire conditions. Exposure to decomposition products may be a hazard to health.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
Specific extinguishing methods	:	Standard procedure for chemical fires.
Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation, especially in confined areas. Use personal protective equipment.

Avoid contact with skin and eyes.

6.2 Environmental precautions

Environmental precautions : Prevent further leakage or spillage if safe to do so.
No special environmental precautions required.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Use mechanical handling equipment.
Keep in suitable, closed containers for disposal.
Clean contaminated surface thoroughly.

6.4 Reference to other sections

For personal protection see section 8.
For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid creating dust.
Do not breathe dust.
Avoid contact with skin and eyes.
For personal protection see section 8.

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

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and immediately after handling the product.
Remove contaminated clothing and protective equipment before entering eating areas.

Dust explosion class : St1

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in an area equipped with acid resistant flooring.
Keep container tightly closed in a dry and well-ventilated place.

Further information on storage conditions : Do not store at temperatures above 30 °C / 86 °F.

Advice on common storage : Incompatible with strong bases and oxidizing agents.

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

7.3 Specific end use(s)

Specific use(s) : For further information see eSDS.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

Citric acid monohydrate : Fresh water
Value: 0,44 mg/l
Marine water
Value: 0,044 mg/l
Fresh water sediment
Value: 7,52 mg/kg wet weight
Marine sediment
Value: 0,752 mg/kg wet weight
Soil
Value: 29,2 mg/kg wet weight

8.2 Exposure controls

Engineering measures

Provide adequate ventilation.

Personal protective equipment

Eye protection : Safety glasses
Ensure that eyewash stations and safety showers are close to the workstation location.

Hand protection
Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
Half mask with a particle filter P2 (EN 143)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	crystalline
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not relevant

pH	:	1,85, 5 % (25 °C)
Melting point/range	:	ca. 135 - 152 °C
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	Not applicable
Vapour density	:	Not applicable
Relative density	:	No data available
Density	:	1,542 g/cm3 (20 °C)
Water solubility	:	ca. 1.840 g/l (20 °C)
Partition coefficient: n-octanol/water	:	log Pow: -1,8 - -0,2 Calculation
Ignition temperature	:	No data available
Thermal decomposition	:	No data available
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	No oxidising effect.

9.2 Other information

Molecular weight	:	210,14 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : Avoid dust formation.

10.5 Incompatible materials

Materials to avoid : Strong bases
Oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products : Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Components:

Citric acid monohydrate:

Acute oral toxicity : LD50 Oral Mouse: 5.400 mg/kg
Method: OECD Test Guideline 401

LD50 Oral Rat: 11.700 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : This information is not available.

Acute dermal toxicity : LD50 Dermal Rat: > 2.000 mg/kg

Acute toxicity (other routes of administration) : LD50 Rat: 725 mg/kg
Application Route: i.p.

LD50 Mouse: 940 mg/kg
Application Route: i.p.

Skin corrosion/irritation

Components:

Citric acid monohydrate:

: Species: Rabbit
Result: No skin irritation
Method: OECD Test Guideline 404
May cause skin irritation in susceptible persons.

Serious eye damage/eye irritation

Components:

Citric acid monohydrate:

: Species: Rabbit
Result: Irritating to eyes.
Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Components:

Citric acid monohydrate:

: No data available

Germ cell mutagenicity

Components:

Citric acid monohydrate:

Genotoxicity in vitro	:	Test Type Ames test Test species: Salmonella typhimurium Concentration: 0 - 5 mg/plate Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Result: negative
Genotoxicity in vivo	:	Test Type: in vivo assay Test species: Rat Application Route: Oral Method: OECD Test Guideline 475 Result: negative
Germ cell mutagenicity- Assessment	:	In vitro tests did not show mutagenic effects

Carcinogenicity

Components:

Citric acid monohydrate:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Reproductive toxicity

Components:

Citric acid monohydrate:

Reproductive toxicity - Assessment : No toxicity to reproduction

STOT - single exposure

Components:

Citric acid monohydrate:

: No data available

STOT - repeated exposure

Components:

Citric acid monohydrate:

: No data available

Repeated dose toxicity

Components:

Citric acid monohydrate:

: Rat:
NOAEL: 4.000 mg/kg
LOAEL: 8.000 mg/kg
Application Route: Oral
Exposure time: 10 d
Dose: 2, 4, 8, 16 g/kg bw/day

Aspiration hazard

Components:
Citric acid monohydrate:
No aspiration toxicity classification

SECTION 12: Ecological information

12.1 Toxicity

Components:

Citric acid monohydrate:

Toxicity to fish	:	LC50 (Leuciscus idus (Golden orfe)): 440 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1.535 mg/l Exposure time: 24 h Test Type: static test
Toxicity to algae	:	NOEC (Scenedesmus quadricauda (Green algae)): 425 mg/l Exposure time: 8 d Test Type: static test
Toxicity to bacteria	:	TT (Pseudomonas putida): > 10.000 mg/l Exposure time: 16 h

12.2 Persistence and degradability

Components:

Citric acid monohydrate:

Biodegradability	:	Biodegradation: 97 %

Method: OECD Test Guideline 301B
Readily biodegradable.

Biodegradation: 100 %
Method: OECD Test Guideline 301E
Readily biodegradable.

Biochemical Oxygen Demand (BOD)	:	526 mg/g
Chemical Oxygen Demand (COD)	:	728 mg/g
Physico-chemical removability	:	Readily biodegradable.

12.3 Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water	:	log Pow: -1,8 - -0,2 Calculation

Components:

Citric acid monohydrate:

Bioaccumulation	:	The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Components:

Citric acid monohydrate:

Assessment	:	Non-classified vPvB substance Non-classified PBT substance

12.6 Other adverse effects

Components:

Citric acid monohydrate:

Additional ecological information	:	This product has no known ecotoxicological effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Where possible recycling is preferred to disposal or incineration. Can be landfilled or incinerated, when in compliance with local regulations.

		Waste codes should be assigned by the user based on the application for which the product was used. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR	:	Not dangerous goods
RID	:	Not dangerous goods
IMDG	:	Not dangerous goods
IATA	:	Not dangerous goods

14.2 Proper shipping name

ADR	:	Not dangerous goods
RID	:	Not dangerous goods
IMDG	:	Not dangerous goods
IATA	:	Not dangerous goods

14.3 Transport hazard class

ADR	:	Not dangerous goods
RID	:	Not dangerous goods
IMDG	:	Not dangerous goods
IATA	:	Not dangerous goods

14.4 Packing group

ADR	:	Not dangerous goods
RID	:	Not dangerous goods
IMDG	:	Not dangerous goods
IATA	:	Not dangerous goods

14.5 Environmental hazards

ADR	:	Not dangerous goods
RID	:	Not dangerous goods
IMDG	:	Not dangerous goods
IATA	:	Not dangerous goods

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.

SECTION 15: Regulatory information

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

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

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

EINECS	:	On the inventory, or in compliance with the inventory
TSCA	:	On TSCA Inventory
AICS	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
NZIoC	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
REACH	:	Notification number: 01-2119457026-42

15.2 Chemical safety assessment

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

SECTION 16: Other information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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

Title of Exposure Scenario	Main User Groups	Sectors of end-use	Chemical product category	Process categories	Environmental Release Categories	Article categories	Ref.
Manufacture	SU 3	SU8	PC19	PROC1, PROC2, PROC3, PROC4, PROC8b	ERC1		1
Used as chemical intermediate	SU 3	SU8, SU9	PC19	PROC1, PROC2, PROC3, PROC4, PROC8b	ERC6a		2
Formulation of preparations	SU 3	SU5, SU 10, SU13, SU20	PC1, PC3, PC9a, PC9b, PC9c, PC12, PC18, PC30, PC31, PC35, PC39	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC19	ERC1, ERC2, ERC3, ERC4		3
Used in personal care products Consumer use Professional use	SU 21	SU 21, SU 22, SU20	PC2, PC39	PROC10, PROC11, PROC19	ERC8a, ERC11a	AC8	4
Use in cleaning agents Industrial use	SU 3		PC3, PC28, PC31, PC35, PC36, PC37	PROC2, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13	ERC2, ERC4, ERC8a, ERC8d, ERC9a, ERC9b	AC8, AC35	5
Use in cleaning agents Professional use	SU 22		PC3, PC28, PC31, PC35, PC36, PC37	PROC1, PROC4, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC19	ERC8a, ERC8d, ERC9a, ERC9b	AC8, AC35	6
Use in cleaning agents Consumer use	SU 21		PC3, PC28, PC31, PC35,		ERC8a, ERC8d, ERC9a, ERC9b	AC8, AC35	7

			PC36, PC37				
Use in paper industry	SU 3	SU6b	PC26	PROC5, PROC8a	ERC4		8
Use in construction products Industrial use Professional use	SU 3	SU 3, SU 22, SU2a, SU2b, SU 10, SU19	PC10	PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a	AC4, AC7, AC8, AC10, AC11, AC13	9
Use in construction products Consumer use	SU 21		PC10		ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a	AC4, AC7, AC8, AC10, AC11, AC13	10
Use in polymers and plastics	SU 3	SU11, SU12	PC32	PROC3, PROC5, PROC8a, PROC8b	ERC6b		11
Use in oil industry	SU 3	SU2a, SU2b	PC20, PC40	PROC3, PROC4, PROC5, PROC8a, PROC8b	ERC8d		12
Used in textile applications	SU 3	SU5, SU 10	PC20, PC23, PC34	PROC8a, PROC8b, PROC10, PROC13, PROC22	ERC4	AC5, AC6	13
Use in paints and coatings Industrial use Professional use	SU 3	SU 3, SU 22, SU 10, SU17, SU18, SU19	PC9a, PC9b, PC9c, PC18, PC34	PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	AC4, AC11	14
Use in paints and coatings Consumer use	SU 21		PC9a, PC9b, PC9c, PC18, PC34		ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	AC4, AC11	15
Use in photography Industrial use	SU 3	SU 3, SU 22, SU20	PC30	PROC5, PROC9,	ERC8a		16

Professional use				PROC13			
Use in photography Consumer use	SU 21		PC30		ERC8a		17
Use as laboratory reagent	SU 3		PC21	PROC1, PROC2, PROC4, PROC8a	ERC4, ERC7		18
Use in water treatment	SU 3	SU 10	PC4, PC7, PC14, PC16, PC17, PC20, PC25, PC31, PC35, PC37	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC18, PROC20, PROC25	ERC4, ERC6b, ERC7		19
Use in metal surface treatment Industrial use Professional use	SU 3	SU 3, SU 22, SU14, SU15, SU16, SU17	PC7, PC14, PC25, PC31, PC35	PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23	ERC4, ERC6b		20
Use in metal surface treatment Consumer use	SU 21		PC7, PC14, PC25, PC31, PC35		ERC4, ERC6b		21
Use in agriculture Industrial use Professional use	SU 3	SU 3, SU 22, SU1	PC8, PC12, PC21	PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19	ERC2, ERC4, ERC8b, ERC8d		22
Use in agriculture Consumer use	SU 21		PC8, PC12, PC21		ERC8b, ERC8d		23
Use in medical devices	SU 3	SU 3, SU 22, SU20	PC20	PROC1	ERC7		24

1. Short title of Exposure Scenario: (Ref.: 1) Manufacture

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU8:** Manufacture of bulk, large scale chemicals (including petroleum products)
Chemical product category	:	**PC19:** Intermediate
Process categories	:	**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 **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Environmental Release Categories	:	**ERC1:** Manufacture of substances

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

Product characteristics

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

Amount used

EU tonnage	:	100000 t/a
Regional use tonnage	:	10000 t/a
Fraction of regional tonnage used locally	:	1
Annual amount per site	:	10000 t/a
Daily amount per site	:	30000 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	900
Dilution Factor (Coastal Areas)	:	1.000

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	350
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,01 %

Technical conditions and measures / Organizational measures

Air	:	No emission expected.

Water	:	Do not flush into surface water or sanitary sewer system. Do not release undiluted and unneutralized to the sewer. Control of pH value.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent	:	10.000 m3/d

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Solutions with low pH-value must be neutralized before discharge. Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	:	Solid wastes disposal method: Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

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

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of one hand
	:	240 cm2
Remarks	:	Relevant for: PROC1 PROC3
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC2 PROC4 PROC8b

Technical conditions and measures

Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Dust must be extracted directly at the point of origin. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid splashing. Good work practice required. Ensure operatives are trained to minimise exposures. Operator monitoring Plant integrity checks

Conditions and measures related to personal protection, hygiene and health evaluation
Effective dust mask In the case of dust or aerosol formation use respirator with an approved filter. Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note
Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0153 mg/L	0,0348
	EUSES		Fresh water sediment	local PEC	0,261 mg/kg wet weight	0,0348
	EUSES		Marine water	local PEC	0,0018 mg/L	0,0408
	EUSES		Marine sediment	local PEC	0,0307 mg/kg wet weight	0,0408
	EUSES		Soil	local PEC	0,0227 mg/kg wet weight	0,000777
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	0,3 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,14 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,03 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	

	conclude safe use.				
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,001 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,01 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,01 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,36 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,18 mg/kg bw/day	

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
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

Not relevant

1. Short title of Exposure Scenario: (Ref.: 2) Used as chemical intermediate

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU8:** Manufacture of bulk, large scale chemicals (including petroleum products) **SU9:** Manufacture of fine chemicals
Chemical product category	:	**PC19:** Intermediate
Process categories	:	**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 **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Environmental Release Categories	:	**ERC6a:** Industrial use resulting in manufacture of another substance (use of intermediates)

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

Product characteristics

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

Amount used

EU tonnage	:	12000 t/a
Fraction of regional tonnage used locally	:	3000 t/a
Fraction of EU tonnage used in region	:	1
Annual amount per site	:	3000 t/a
Daily amount per site	:	10000 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	40
Dilution Factor (Coastal Areas)	:	100

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	300
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,7 %

Technical conditions and measures / Organizational measures

Air	:	No emission expected.
Water	:	Do not flush into surface water or sanitary sewer system. Do not release undiluted and unneutralized to the sewer. Control of pH value.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent	:	10.000 m3/d

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Solutions with low pH-value must be neutralized before discharge. Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	:	Solid wastes disposal method: Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

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

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of one hand
	:	240 cm2
Remarks	:	Relevant for: PROC1 PROC3
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC2 PROC4 PROC8b

Technical conditions and measures

Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Dust must be extracted directly at the point of origin. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid splashing. Good work practice required. Ensure operatives are trained to minimise exposures. Operator monitoring Plant integrity checks

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

Effective dust mask In the case of dust or aerosol formation use respirator with an approved filter. Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note

Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0154 mg/L	0,035
	EUSES		Fresh water sediment	local PEC	0,263 mg/kg wet weight	0,035
	EUSES		Marine water	local PEC	0,0084 mg/L	0,191
	EUSES		Marine sediment	local PEC	0,144 mg/kg wet weight	0,191
	EUSES		Soil	local PEC	0,0411 mg/kg wet weight	0,00141
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	0,3 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,14 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,03 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	
PROC8b	ECETOC TRA,	With Local Ex-	Chronic dermal	0,69 mg/kg	

	Qualitative approach used to conclude safe use.	haust Ventilation	systemic exposure	bw/day	
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,001 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,01 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,01 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,36 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,18 mg/kg bw/day	

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
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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 3**) Formulation of preparations**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU5:** Manufacture of textiles, leather, fur **SU 10:** Formulation [mixing] of preparations and/ or repackaging (excluding alloys) **SU13:** Manufacture of other non-metallic mineral products, e.g. plasters, cement **SU20:** Health services
Chemical product category	:	**PC1:** Adhesives, sealants **PC3:** Air care products **PC9a:** Coatings and paints, thinners, paint removers **PC9b:** Fillers, putties, plasters, modelling clay **PC9c:** Finger paints **PC12:** Fertilizers **PC18:** Ink and toners **PC30:** Photo-chemicals **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products) **PC39:** Cosmetics, personal care products
Process categories	:	**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) **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) **PROC13:** Treatment of articles by dipping and pouring **PROC14:** Production of preparations or articles by tabletting, compression, extrusion, pelletisation **PROC15:** Use as laboratory reagent **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC1:** Manufacture of substances **ERC2:** Formulation of preparations **ERC3:** Formulation in materials

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

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4: Manufacture of substances, Formulation of preparations, Formulation in materials, Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics

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

Amount used

EU tonnage	:	100000 t/a
Regional use tonnage	:	10000 t/a
Fraction of regional tonnage used locally	:	0,6
Annual amount per site	:	6000 t/a
Daily amount per site	:	20000 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	10

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	300
Emission or Release Factor: Air	:	0,25 %
Emission or Release Factor: Water	:	0,05 %

Technical conditions and measures / Organizational measures

Water	:	Removal of solids in settling tanks. Do not flush into surface water or sanitary sewer system. Do not release undiluted and unneutralized to the sewer. Control of pH value.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	10.000 m3/d

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Solutions with low pH-value must be neutralized before discharge. Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	:	Solid wastes disposal method: Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC14, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of preparations or articles by tabletting, compression, extrusion, pelletisation, Use as laboratory reagent

Product characteristics

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

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of one hand
	:	240 cm2
Remarks	:	Relevant for: PROC1 PROC3 PROC15
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC2 PROC4 PROC5 PROC8b PROC9 PROC14
Dermal exposure	:	Both hands
	:	960 cm2
Remarks	:	Relevant for: PROC8a
Dermal exposure	:	Hands and forearms
	:	1500 cm2
Remarks	:	Relevant for: PROC7

Technical conditions and measures

Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Dust must be extracted directly at the point of origin. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid splashing. Good work practice required. Ensure operatives are trained to minimise exposures. Operator monitoring Plant integrity checks

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

Effective dust mask In the case of dust or aerosol formation use respirator with an approved filter. Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note
Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

2.3 Contributing scenario controlling worker exposure for: PROC13, PROC19: Treatment of articles by dipping and pouring, Hand-mixing with intimate contact and only PPE available

Product characteristics

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

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC13
Dermal exposure	:	Both hands
	:	1980 cm2
Remarks	:	Relevant for: PROC19

Technical conditions and measures
Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Dust must be extracted directly at the point of origin. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.

Organisational measures to prevent /limit releases, dispersion and exposure
Avoid splashing. Good work practice required. Ensure operatives are trained to minimise exposures. Operator monitoring Plant integrity checks

Conditions and measures related to personal protection, hygiene and health evaluation
Effective dust mask In the case of dust or aerosol formation use respirator with an approved filter. Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note
Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0158 mg/L	0,0359
	EUSES		Fresh water sediment	local PEC	0,27 mg/kg wet weight	0,0359
	EUSES		Marine water	local PEC	0,0194 mg/L	0,441
	EUSES		Marine sediment	local PEC	0,331 mg/kg wet weight	0,441
	EUSES		Soil	local PEC	0,106 mg/kg wet weight	0,00362
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	0,34 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,14 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,034 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	
PROC5	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	1,37 mg/kg bw/day	
PROC7	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	4,29 mg/kg bw/day	
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	1,37 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative approach used to	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	

	conclude safe use.				
PROC14	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,34 mg/kg bw/day	
PROC15	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,034 mg/kg bw/day	
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC1	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,0014 mg/kg bw/day	
PROC2	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,014 mg/kg bw/day	
PROC3	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,014 mg/kg bw/day	
PROC4	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,36 mg/kg bw/day	
PROC5	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,36 mg/kg bw/day	
PROC7	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	1,43 mg/kg bw/day	
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,71 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,36 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,29 mg/kg bw/day	
PROC14	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,14 mg/kg bw/day	
PROC15	ECETOC TRA, Qualitative approach used to	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,071 mg/kg bw/day	

	conclude safe use.				
PROC13	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	0,69 mg/kg bw/day	
PROC19	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	14,1 mg/kg bw/day	
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC13	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,0014 mg/kg bw/day	
PROC19	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,0071 mg/kg bw/day	

PROC1	:	Use in closed process, no likelihood of exposure
PROC13	:	Treatment of articles by dipping and pouring
PROC14	:	Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15	:	Use as laboratory reagent
PROC19	:	Hand-mixing with intimate contact and only PPE available
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)
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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 4**) Used in personal care products, Consumer use, Professional use**

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Sectors of end-use	:	**SU 21:** Consumer uses: Private households (= general public = consumers) **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU20:** Health services
Chemical product category	:	**PC2:** Adsorbents **PC39:** Cosmetics, personal care products
Process categories	:	**PROC10:** Roller application or brushing **PROC11:** Non industrial spraying **PROC19:** Hand-mixing with intimate contact and only PPE available
Article categories	:	**AC8:** Paper articles
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems **ERC11a:** Wide dispersive indoor use of long-life articles and materials with low release
Further information	:	Only exposure assessment and risk characterisation for the environment are necessary for this use. Formulation of personal care products: refer to: Formulation into preparations

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC11a: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of long-life articles and materials with low release

Amount used

EU tonnage	:	7500 t/a
Regional use tonnage	:	750 t/a
Fraction of regional tonnage used locally	:	0,0005
Daily amount for wide dispersive uses	:	1,03 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	900
Dilution Factor (Coastal Areas)	:	1.000

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365

Emission or Release Factor: Air : 0 %
Emission or Release Factor: Water : 100 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant

Conditions and measures related to external recovery of waste
Recovery Methods : Recovery of sludge for agriculture or horticulture

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0159 mg/L	0,0361
	EUSES		Fresh water sediment	local PEC	0,271 mg/kg wet weight	0,0361
	EUSES		Marine water	local PEC	0,0015 mg/L	0,0337
	EUSES		Marine sediment	local PEC	0,0253 mg/kg wet weight	0,0337
	EUSES		Soil	local PEC	0,0302 mg/kg wet weight	0,00103
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 5**) Use in cleaning agents, Industrial use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Chemical product category	:	**PC3:** Air care products **PC28:** Perfumes, fragrances **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products) **PC36:** Water softeners **PC37:** Water treatment chemicals
Process categories	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **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
Article categories	:	**AC8:** Paper articles **AC35:** Scented paper articles
Environmental Release Categories	:	**ERC2:** Formulation of preparations **ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC8a:** Wide dispersive indoor use of processing aids in open systems **ERC8d:** Wide dispersive outdoor use of processing aids in open systems **ERC9a:** Wide dispersive indoor use of substances in closed systems **ERC9b:** Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC8a, ERC8d, ERC9a, ERC9b: Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in 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).

Amount used

EU tonnage	:	100000 t/a
Regional use tonnage	:	10000 t/a
Fraction of regional tonnage used locally	:	0,0005
Annual amount per site	:	5000 kg
Daily amount per site	:	14 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	10
Dilution Factor (Coastal Areas)	:	100

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	100 %

Technical conditions and measures / Organizational measures

Water	:	Do not flush into surface water or sanitary sewer system. Do not release undiluted and unneutralized to the sewer. Control of pH value.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d

Conditions and measures related to disposal of articles at end of service life

Waste treatment	:	Solutions with low pH-value must be neutralized before discharge. Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	:	Solid wastes disposal method: Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to recovery of articles at the end of service life

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13: Use in closed, continuous process with occasional controlled exposure, Use in batch and other process (synthesis) where opportunity for exposure arises, Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring

Product (article) characteristic

Remarks	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	:	Solid substance, Liquid mixture
Physical Form (at time of use)	:	Dustiness: Low
Remarks	:	Relevant for: PROC8a PROC8b PROC9 PROC10 PROC13
Physical Form (at time of use)	:	Dustiness: High, Fugacity: high
Remarks	:	Relevant for: PROC7

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC8b PROC9 PROC13
Dermal exposure	:	Both hands
	:	960 cm2
Remarks	:	Relevant for: PROC8a PROC10
Dermal exposure	:	Hands and forearms
	:	1500 cm2
Remarks	:	Relevant for: PROC7

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Outdoor / Indoor	:	Outdoor

Technical conditions and measures

Handle substance within a closed system.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid splashing. Good work practice required. Ensure operatives are trained to minimise exposures.
Operator monitoring Plant integrity checks

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

Effective dust mask Respirator with a dust filter Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note

Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0248 mg/L	0,0563
	EUSES		Fresh water sediment	local PEC	0,423 mg/kg wet weight	0,0563
	EUSES		Marine water	local PEC	0,0024 mg/L	0,0539

	EUSES		Marine sediment	local PEC	0,0405 mg/kg wet weight	0,0539
	EUSES		Soil	local PEC	0,402 mg/kg wet weight	0,0138
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC7	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic dermal systemic exposure	2,14 mg/kg bw/day	
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	13,7 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	6,9 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	6,9 mg/kg bw/day	
PROC10	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	27,4 mg/kg bw/day	
PROC13	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	13,7 mg/kg bw/day	
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC7	ECETOC TRA, Qualitative approach used to conclude safe use.	With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,71 mg/kg bw/day	
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	
PROC8b	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,014 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative approach used to	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,01 mg/kg bw/day	

	conclude safe use.				
PROC10	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	
PROC13	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,014 mg/kg bw/day	

PROC10 : Roller application or brushing
PROC13 : Treatment of articles by dipping and pouring
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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 6) Use in cleaning agents, Professional use

Main User Groups	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Chemical product category	:	**PC3:** Air care products **PC28:** Perfumes, fragrances **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products) **PC36:** Water softeners **PC37:** Water treatment chemicals
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **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
Article categories	:	**AC8:** Paper articles **AC35:** Scented paper articles
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems **ERC8d:** Wide dispersive outdoor use of processing aids in open systems **ERC9a:** Wide dispersive indoor use of substances in closed systems **ERC9b:** Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in 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).

Amount used

EU tonnage	:	100000 t/a
Regional use tonnage	:	10000 t/a

Fraction of regional tonnage used locally	:	0,0005
Daily amount for wide dispersive uses	:	14 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	10
Dilution Factor (Coastal Areas)	:	100

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	100 %

Technical conditions and measures / Organizational measures

Remarks	:	Not applicable

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d

Conditions and measures related to recovery of articles at the end of service life

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC4, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC19: Use in closed process, no likelihood of exposure, Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Roller application or brushing, Non industrial spraying, Treatment of articles by dipping and pouring, Hand-mixing with intimate contact and only PPE available

Product (article) characteristic

Remarks	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	:	Solid substance, Dustiness: Low, Liquid mixture

Frequency and duration of use

Exposure duration	:	> 4 h

Human factors not influenced by risk management

Body weight	:	70 kilogram
Breathing volume	:	10 m3/day
Dermal exposure	:	Palm of both hands
	:	480 cm2
Remarks	:	Relevant for: PROC9 PROC13
Dermal exposure	:	Both hands
	:	960 cm2
Remarks	:	Relevant for: PROC8a PROC10
Dermal exposure	:	Hands and forearms
	:	1500 cm2

Remarks : Relevant for: PROC11
Dermal exposure : Both hands
: 1980 cm2
Remarks : Relevant for: PROC19

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

Technical conditions and measures
Provide adequate ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure
Good work practice required.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear protective gloves/ protective clothing. Use suitable eye protection. For personal protection see section 8.

Note
Local effects
Eye irritation
Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0248 mg/L	0,0563
	EUSES		Fresh water sediment	local PEC	0,423 mg/kg wet weight	0,0563
	EUSES		Marine water	local PEC	0,0024 mg/L	0,0539
	EUSES		Marine sediment	local PEC	0,0405 mg/kg wet weight	0,0539
	EUSES		Soil	local PEC	0,402 mg/kg wet weight	0,0138
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	13,7 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative ap-	Without Local Exhaust Ventilation	Chronic dermal systemic expo-	6,86 mg/kg bw/day	

	proach used to conclude safe use.		sure		
PROC10	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	27,4 mg/kg bw/day	
PROC11	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	107 mg/kg bw/day	
PROC19	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic dermal systemic exposure	141 mg/kg bw/day	
Remarks: An additional uptake factor may be applied. Dermal: 0.006					
PROC8a	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	
PROC9	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	
PROC10	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	
PROC11	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,14 mg/kg bw/day	
PROC19	ECETOC TRA, Qualitative approach used to conclude safe use.	Without Local Exhaust Ventilation	Chronic inhalation systemic exposure	0,07 mg/kg bw/day	

PROC10 : Roller application or brushing
PROC11 : Non industrial spraying
PROC19 : Hand-mixing with intimate contact and only PPE available
PROC8a : Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 7) Use in cleaning agents, Consumer use

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC3:** Air care products **PC28:** Perfumes, fragrances **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products) **PC36:** Water softeners **PC37:** Water treatment chemicals
Article categories	:	**AC8:** Paper articles **AC35:** Scented paper articles
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems **ERC8d:** Wide dispersive outdoor use of processing aids in open systems **ERC9a:** Wide dispersive indoor use of substances in closed systems 剽 彦 匧 店 羿 咈 唔 喜 嗰 嘫 嘯 outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in 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).

Amount used

EU tonnage	:	100000 t/a
Regional use tonnage	:	10000 t/a
Fraction of regional tonnage used locally	:	0,0005
Daily amount for wide dispersive uses	:	14 kg

Environment factors not influenced by risk management

Dilution Factor (River)	:	10
Dilution Factor (Coastal Areas)	:	100

Other given operational conditions affecting environmental exposure

Continuous use/release

Number of emission days per year	:	365
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	100 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d

Conditions and measures related to external recovery of waste

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling consumer exposure for: PC3, PC28, PC31, PC35, PC36, PC37: Air care products, Perfumes, fragrances, Polishes and wax blends, Washing and cleaning products (including solvent based products), Water softeners, Water treatment chemicals, AC8, AC35: Paper articles, Scented paper articles

Product (article) characteristic

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

Frequency and duration of use/exposure from service life

Exposure duration	:	> 4 h
Remarks	:	Expected exposure of the consumer will be less than predicted exposure for professional use due to shorter durations and less frequent use. See chapter Use in cleaning agents Professional use

Other given operational conditions affecting consumers exposure from article service life

Outdoor / Indoor	:	Indoor
Outdoor / Indoor	:	Outdoor

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Application Route	:	Consumer use
Consumer Measures	:	Provide adequate ventilation.
Remarks	:	Local effects Eye irritation Risk management measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0248 mg/L	0,0563
	EUSES		Fresh water sediment	local PEC	0,423 mg/kg wet weight	0,0563
	EUSES		Marine water	local PEC	0,0024 mg/L	0,0539
	EUSES		Marine sedi-	local PEC	0,0405	0,0539

			ment		mg/kg wet weight	
	EUSES		Soil	local PEC	0,402 mg/kg wet weight	0,0138
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC3, PC28, PC31, PC35, PC36, PC37, AC8, AC35	Qualitative approach used to conclude safe use.		Chronic dermal systemic exposure		
PC3, PC28, PC31, PC35, PC36, PC37	Qualitative approach used to conclude safe use.		Chronic inhalation local exposure		

AC35 : Scented paper articles
AC8 : Paper articles
PC28 : Perfumes, fragrances
PC3 : Air care products
PC31 : Polishes and wax blends
PC35 : Washing and cleaning products (including solvent based products)
PC36, PC37 : Water softeners, Water treatment chemicals
:

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 8) Use in paper industry

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU6b:** Manufacture of pulp, paper and paper products
Chemical product category	:	**PC26:** Paper and board dye, finishing and impregnation products: including bleaches and other processing aids
Process categories	:	**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
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles

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

Amount used

EU tonnage	:	1000 t/a
Regional use tonnage	:	100 t/a
Fraction of regional tonnage used locally	:	1
Annual amount per site	:	100 t/a
Daily amount per site	:	333 kg

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	300
Emission or Release Factor: Water	:	2 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC5, PROC8a: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Use as an intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate

whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels. The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 9**) Use in construction products, Industrial use, Professional use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU2a:** Mining, (without offshore industries) **SU2b:** Offshore industries **SU 10:** Formulation [mixing] of preparations and/ or repackaging (excluding alloys) **SU19:** Building and construction work
Chemical product category	:	**PC10:** Building and construction mixtures not covered elsewhere
Process categories	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **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) **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 **PROC10:** Roller application or brushing **PROC11:** Non industrial spraying **PROC13:** Treatment of articles by dipping and pouring **PROC14:** Production of preparations or articles by tabletting, compression, extrusion, pelletisation **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
Article categories	:	**AC4:** Stone, plaster, cement, glass and ceramic articles **AC7:** Metal articles **AC8:** Paper articles **AC10:** Rubber articles **AC11:** Wood articles **AC13:** Plastic articles
Environmental Release Categories	:	**ERC5:** Industrial use resulting in inclusion into or onto a matrix **ERC8c:** Wide dispersive indoor use resulting in inclusion into

or onto a matrix
ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC11a: Wide dispersive indoor use of long-life articles and materials with low release
ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC12a: Industrial processing of articles with abrasive techniques (low release)

2.1 Contributing scenario controlling environmental exposure for: ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a: Industrial use resulting in inclusion into or onto a matrix, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing), Wide dispersive indoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing), Industrial processing of articles with abrasive techniques (low release)

Amount used

Regional use tonnage	:	1500 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	10 %
Emission or Release Factor: Soil	:	90 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24: Use in closed, continuous process with occasional controlled exposure, Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Roller application or brushing, Non industrial spraying, Treatment of articles by dipping and pouring, Production of preparations or articles by tabletting, compression, extrusion, pelletisation, Hand-mixing with intimate contact and only PPE available, Low energy manipulation of substances bound in materials and/ or articles, High (mechanical) energy work-up of substances bound in materials and/ or articles

Product (article) characteristic
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 10**) Use in construction products, Consumer use**

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC10:** Building and construction mixtures not covered elsewhere
Article categories	:	**AC4:** Stone, plaster, cement, glass and ceramic articles **AC7:** Metal articles **AC8:** Paper articles **AC10:** Rubber articles **AC11:** Wood articles **AC13:** Plastic articles
Environmental Release Categories	:	**ERC8c:** Wide dispersive indoor use resulting in inclusion into or onto a matrix **ERC8f:** Wide dispersive outdoor use resulting in inclusion into or onto a matrix **ERC10a:** Wide dispersive outdoor use of long-life articles and materials with low release **ERC10b:** Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) **ERC11a:** Wide dispersive indoor use of long-life articles and materials with low release **ERC11b:** Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing) **ERC12a:** Industrial processing of articles with abrasive techniques (low release)

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing), Wide dispersive indoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing), Industrial processing of articles with abrasive techniques (low release)

Amount used

Regional use tonnage	:	1500 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	10 %
Emission or Release Factor: Soil	:	90 %
Remarks	:	Relevant exposures were determined for uses with higher

exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling consumer exposure for: PC10: Building and construction mixtures not covered elsewhere, AC4, AC7, AC8, AC10, AC11, AC13: Stone, plaster, cement, glass and ceramic articles, Metal articles, Paper articles, Rubber articles, Wood articles, Plastic articles

Product (article) characteristic
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use/exposure from service life
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 11) Use in polymers and plastics

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU11:** Manufacture of rubber products **SU12:** Manufacture of plastics products, including compounding and conversion
Chemical product category	:	**PC32:** Polymer preparations and compounds
Process categories	:	**PROC3:** Use in closed batch process (synthesis or formulation) **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Environmental Release Categories	:	**ERC6b:** Industrial use of reactive processing aids

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

Amount used

EU tonnage	:	200 t/a
Regional use tonnage	:	20 t/a
Fraction of regional tonnage used locally	:	1
Annual amount per site	:	20 t/a
Daily amount per site	:	67 kg

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	300
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,65 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC8a, PROC8b: Use in closed batch process (synthesis or formulation), Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 12) Use in oil industry

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU2a:** Mining, (without offshore industries) **SU2b:** Offshore industries
Chemical product category	:	**PC20:** Products such as pH-regulators, flocculants, precipitants, neutralization agents **PC40:** Extraction agents
Process categories	:	**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
Environmental Release Categories	:	**ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8d: Wide dispersive outdoor use of processing aids in open systems

Amount used

EU tonnage	:	900 t/a
Regional use tonnage	:	100 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	100 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC5, PROC8a, PROC8b: Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 13) Used in textile applications

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU5:** Manufacture of textiles, leather, fur **SU 10:** Formulation [mixing] of preparations and/ or repackaging (excluding alloys)
Chemical product category	:	**PC20:** Products such as pH-regulators, flocculants, precipitants, neutralization agents **PC23:** Leather tanning, dye, finishing, impregnation and care products **PC34:** Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Process categories	:	**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 **PROC13:** Treatment of articles by dipping and pouring **PROC22:** Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting
Article categories	:	**AC5:** Fabrics, textiles and apparel **AC6:** Leather articles
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles

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

Amount used

EU tonnage	:	300 t/a
Regional use tonnage	:	120 t/a
Fraction of regional tonnage used locally	:	0,05
Annual amount per site	:	6000 kg
Daily amount per site	:	20 kg

Other given operational conditions affecting environmental exposure

Continuous use/release

Number of emission days per year	:	300
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	100 %

Technical conditions and measures / Organizational measures

Air	:	No emission expected.
Water	:	Do not flush into surface water or sanitary sewer system. Do not release undiluted and unneutralized to the sewer. Control of pH value.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d

Conditions and measures related to disposal of articles at end of service life

Waste treatment	:	Solutions with low pH-value must be neutralized before discharge. Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	:	Solid wastes disposal method: Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to recovery of articles at the end of service life

Recovery Methods	:	Recovery of sludge for agriculture or horticulture

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC10, PROC13, PROC22: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring, Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting

Product (article) characteristic

Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	EUSES		Fresh water	local PEC	0,0292 mg/L	0,0663
	EUSES		Fresh water sediment	local PEC	0,498 mg/kg wet weight	0,0663
	EUSES		Marine water	local PEC	0,101 mg/L	2,3
Remarks: Direct discharge to the marine environment is unlikely for this use.						
	EUSES		Marine sedi-	local PEC	1,73 mg/kg	2,3

			ment		wet weight	
Remarks: Direct discharge to the marine environment is unlikely for this use.						
	EUSES		Soil	local PEC	0,587 mg/kg wet weight	0,0201
	EUSES		Air	local PEC	0 mg/m³	
Remarks: Negligible release to air						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 14**) Use in paints and coatings, Industrial use, Professional use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU 10:** Formulation [mixing] of preparations and/ or repackaging (excluding alloys) **SU17:** General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment **SU18:** Manufacture of furniture **SU19:** Building and construction work
Chemical product category	:	**PC9a:** Coatings and paints, thinners, paint removers **PC9b:** Fillers, putties, plasters, modelling clay **PC9c:** Finger paints **PC18:** Ink and toners **PC34:** Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Process categories	:	**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 **PROC10:** Roller application or brushing **PROC11:** Non industrial spraying **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
Article categories	:	**AC4:** Stone, plaster, cement, glass and ceramic articles **AC11:** Wood articles
Environmental Release Categories	:	**ERC5:** Industrial use resulting in inclusion into or onto a matrix **ERC8c:** Wide dispersive indoor use resulting in inclusion into or onto a matrix **ERC8f:** Wide dispersive outdoor use resulting in inclusion into or onto a matrix **ERC10a:** Wide dispersive outdoor use of long-life articles and materials with low release **ERC10b:** Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) **ERC11a:** Wide dispersive indoor use of long-life articles and

materials with low release
ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b: Industrial use resulting in inclusion into or onto a matrix, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing), Wide dispersive indoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

Amount used

EU tonnage	:	300 t/a
Regional use tonnage	:	40 t/a
Fraction of regional tonnage used locally	:	0,25
Annual amount for wide disperse uses	:	10 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	2 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24: Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Roller application or brushing, Non industrial spraying, Hand-mixing with intimate contact and only PPE available, Low energy manipulation of substances bound in materials and/ or articles, High (mechanical) energy work-up of substances bound in materials and/ or articles

Product (article) characteristic

Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 15) Use in paints and coatings, Consumer use

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC9a:** Coatings and paints, thinners, paint removers **PC9b:** Fillers, putties, plasters, modelling clay **PC9c:** Finger paints **PC18:** Ink and toners **PC34:** Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Article categories	:	**AC4:** Stone, plaster, cement, glass and ceramic articles **AC11:** Wood articles
Environmental Release Categories	:	**ERC8c:** Wide dispersive indoor use resulting in inclusion into or onto a matrix **ERC8f:** Wide dispersive outdoor use resulting in inclusion into or onto a matrix **ERC10a:** Wide dispersive outdoor use of long-life articles and materials with low release **ERC10b:** Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) **ERC11a:** Wide dispersive indoor use of long-life articles and materials with low release **ERC11b:** Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing), Wide dispersive indoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

Amount used

EU tonnage	:	300 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	2 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling consumer exposure for: PC9a, PC9b, PC9c, PC18, PC34: Coatings and paints, thinners, paint removers, Fillers, putties, plasters, modelling clay, Finger paints, Ink and toners, Textile dyes, finishing and impregnating products; including bleaches and other processing aids, AC4, AC11: Stone, plaster, cement, glass and ceramic articles, Wood articles

Product (article) characteristic
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use/exposure from service life
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 16**) Use in photography, Industrial use, Professional use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU20:** Health services
Chemical product category	:	**PC30:** Photo-chemicals
Process categories	:	**PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC13:** Treatment of articles by dipping and pouring
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

Amount used

EU tonnage	:	200 t/a

Other given operational conditions affecting environmental exposure

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Use in cleaning agents

2.2 Contributing scenario controlling worker exposure for: PROC5, PROC9, PROC13: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Treatment of articles by dipping and pouring

Product characteristics

Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 17) Use in photography, Consumer use

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC30:** Photo-chemicals
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

Amount used

EU tonnage	:	200 t/a

Other given operational conditions affecting environmental exposure

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Use in cleaning agents

2.2 Contributing scenario controlling consumer exposure for: PC30: Photo-chemicals

Product characteristics

Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 18**) Use as laboratory reagent**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Chemical product category	:	**PC21:** Laboratory chemicals
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC7:** Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of substances in closed systems

Amount used

EU tonnage	:	1000 t/a

Other given operational conditions affecting environmental exposure

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture

Used as chemical intermediate Formulation of preparations
Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 19**) Use in water treatment**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 10:** Formulation [mixing] of preparations and/ or repackaging (excluding alloys)
Chemical product category	:	**PC4:** Anti-Freeze and de-icing products **PC7:** Base metals and alloys **PC14:** Metal surface treatment products, including galvanic and electroplating products **PC16:** Heat transfer fluids **PC17:** Hydraulic fluids **PC20:** Products such as pH-regulators, flocculants, precipitants, neutralization agents **PC25:** Metal working fluids **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products) **PC37:** Water treatment chemicals
Process categories	:	**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 **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 **PROC18:** Greasing at high energy conditions **PROC20:** Heat and pressure transfer fluids in dispersive, professional use but closed systems **PROC25:** Other hot work operations with metals
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC6b:** Industrial use of reactive processing aids **ERC7:** Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b, ERC7: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids, Industrial use of substances in closed systems

Product characteristics

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

Amount used

EU tonnage	:	1000 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release

Number of emission days per year	:	365
Emission or Release Factor: Water	:	100 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC18, PROC20, PROC25: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring, Greasing at high energy conditions, Heat and pressure transfer fluids in dispersive, professional use but closed systems, Other hot work operations with metals

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations

Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 20**) Use in metal surface treatment, Industrial use, Professional use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU14:** Manufacture of basic metals, including alloys **SU15:** Manufacture of fabricated metal products, except machinery and equipment **SU16:** Manufacture of computer, electronic and optical products, electrical equipment **SU17:** General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	:	**PC7:** Base metals and alloys **PC14:** Metal surface treatment products, including galvanic and electroplating products **PC25:** Metal working fluids **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products)
Process categories	:	**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 **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 **PROC17:** Lubrication at high energy conditions and in partly open process **PROC18:** Greasing at high energy conditions **PROC23:** Open processing and transfer operations with minerals/ metals at elevated temperature
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC6b:** Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids

Amount used

EU tonnage : 1000 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release

Number of emission days per year : 365

Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Use in cleaning agents

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23: Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Industrial spraying, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring, Lubrication at high energy conditions and in partly open process, Greasing at high energy conditions, Open processing and transfer operations with minerals/ metals at elevated temperature

Frequency and duration of use

Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

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

			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			

Remarks: Relevant exposures were determined for uses with higher exposure.

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				

Remarks: Relevant exposures were determined for uses with higher exposure.

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 21) Use in metal surface treatment, Consumer use

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC7:** Base metals and alloys **PC14:** Metal surface treatment products, including galvanic and electroplating products **PC25:** Metal working fluids **PC31:** Polishes and wax blends **PC35:** Washing and cleaning products (including solvent based products)
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC6b:** Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids

Amount used

EU tonnage	:	1000 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Use in cleaning agents

2.2 Contributing scenario controlling consumer exposure for: PC7, PC14, PC25, PC31, PC35: Base metals and alloys, Metal surface treatment products, including galvanic and electroplating products, Metal working fluids, Polishes and wax blends, Washing and cleaning products (including solvent based products)

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.**:** 22**) Use in agriculture, Industrial use, Professional use**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU1:** Agriculture, forestry, fishery
Chemical product category	:	**PC8:** Biocidal products (e.g. Disinfectants, pest control) **PC12:** Fertilizers **PC21:** Laboratory chemicals
Process categories	:	**PROC3:** Use in closed batch process (synthesis or formulation) **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC10:** Roller application or brushing **PROC11:** Non industrial spraying **PROC14:** Production of preparations or articles by tabletting, compression, extrusion, pelletisation **PROC15:** Use as laboratory reagent **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations **ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC8b:** Wide dispersive indoor use of reactive substances in open systems **ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC8b, ERC8d: Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of processing aids in open systems

Amount used

EU tonnage	:	1500 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release
Number of emission days per year : 365
Emission or Release Factor: Water : 10 %
Emission or Release Factor: Soil : 90 %
Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19: Use in closed batch process (synthesis or formulation), Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Roller application or brushing, Non industrial spraying, Production of preparations or articles by tabletting, compression, extrusion, pelletisation, Use as laboratory reagent, Hand-mixing with intimate contact and only PPE available

Product characteristics

Physical Form (at time of use) : Solid mixture, Liquid mixture

Frequency and duration of use

Remarks : Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			

			Soil			
			Air			

Remarks: Relevant exposures were determined for uses with higher exposure.

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				

Remarks: Relevant exposures were determined for uses with higher exposure.

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 23) Use in agriculture, Consumer use

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC8:** Biocidal products (e.g. Disinfectants, pest control) **PC12:** Fertilizers **PC21:** Laboratory chemicals
Environmental Release Categories	:	**ERC8b:** Wide dispersive indoor use of reactive substances in open systems **ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8d: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of processing aids in open systems

Amount used

EU tonnage	:	1500 t/a

Other given operational conditions affecting environmental exposure

Continuous use/release		
Number of emission days per year	:	365
Emission or Release Factor: Water	:	10 %
Emission or Release Factor: Soil	:	90 %
Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Manufacture Used as chemical intermediate Formulation of preparations Used in personal care products Use in cleaning agents Used in textile applications

2.2 Contributing scenario controlling consumer exposure for: PC8, PC12, PC21: Biocidal products (e.g. Disinfectants, pest control), Fertilizers, Laboratory chemicals

Product characteristics

Physical Form (at time of use)	:	Solid mixture, Liquid mixture

Frequency and duration of use

Remarks	:	Relevant exposures were determined for uses with higher exposure. Safe use was concluded provided the risk management measures are followed. See chapter Used as chemical intermediate Manufacture Formulation of preparations Use in cleaning agents

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
			Fresh water			
			Fresh water sediment			
			Marine water			
			Marine sediment			
			Soil			
			Air			
Remarks: Relevant exposures were determined for uses with higher exposure.						

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				
Remarks: Relevant exposures were determined for uses with higher exposure.					

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.

1. Short title of Exposure Scenario: (Ref.: 24) Use in medical devices

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen) **SU20:** Health services
Chemical product category	:	**PC20:** Products such as pH-regulators, flocculants, precipitants, neutralization agents
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure
Environmental Release Categories	:	**ERC7:** Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems

Amount used

EU tonnage	:	1000 t/a

Technical conditions and measures / Organizational measures

Remarks	:	The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

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

Technical conditions and measures

Use product only in closed system.

Organisational measures to prevent /limit releases, dispersion and exposure

Ensure operatives are trained to minimise exposures.

Note

The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.		Fresh water			
	Qualitative approach used to conclude safe use.		Fresh water sediment			
	Qualitative approach used to conclude safe use.		Marine water			
	Qualitative approach used to conclude safe use.		Marine sediment			
	Qualitative approach used to conclude safe use.		Soil			
	Qualitative approach used to conclude safe use.		Air			

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
	Qualitative approach used to conclude safe use.				

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

The immediate downstream user is required to evaluate
whether the operational conditions and risk management measures described in the exposure scenario fit to his use.
If other OC/RMM are adopted, the user should ensure that risks are managed to at least equivalent levels.
The risk assessment tools given in section 3 may be used for scaling.