

# Safety Data Sheet according to Regulation (EC) 1907/2006 (REACH)

Revision date: 2020-07-22 Supercedes: 2019-08-21

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

Product trade name:Kalama* Benzyl Alcohol NF-ParenteralCompany product number:BZALCPARREACH registration number:01-2119492630-38-0021Substance name:Banzul alcohol	1.1. Product identifier:	
REACH registration number: 01-2119492630-38-0021	Product trade name:	Kalama* Benzyl Alcohol NF-Parenteral
•	Company product number:	BZALCPAR
Outedance name:	REACH registration number:	01-2119492630-38-0021
Substance name: Benzyl alconol	Substance name:	Benzyl alcohol
Substance identification number: EC 202-859-9; EC index number: 603-057-00-5	Substance identification number:	
Other means of identification:Benzene methanol; Phenylcarbinol; alpha-Hydroxytoluene; Phenylmethanol; (Hydroxymethyl)benzene; alpha-Toluenol	Other means of identification:	Benzene methanol; Phenylcarbinol; alpha-Hydroxytoluene; Phenylmethanol; (Hydroxymethyl)benzene; alpha-Toluenol
1.2. Relevant identified uses of the substance or mixture and uses advised against:	1.2. Relevant identified uses of the substance	e or mixture and uses advised against:
	Uses:	Intermediate. Odour agent. Laboratory chemical. Photosensitive agent and other photochemical. Solvent. Viscosity adjuster. Flow improver. See Annex for covered uses.
Uses advised against: None identified	Uses advised against:	None identified
1.3. Details of the supplier of the safety data sheet:	1.3. Details of the supplier of the safety data a	sheet:
Manufacturer/Supplier: Emerald Performance Materials, LLC	Manufacturer/Supplier:	Emerald Performance Materials, LLC
Emerald Kalama Chemical, LLC		Emerald Kalama Chemical, LLC
1296 NW Third Street		1296 NW Third Street
Kalama, WA 98625 United States		
Telephone: +1-360-673-2550		Telephone: +1-360-673-2550
1499 SE Tech Center Place, Suite 300		1499 SE Tech Center Place, Suite 300
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EU Only Representative: Penman Consulting bvba	EU Only Representative:	5
Avenue des Arts 10		
B-1210 Brussels		
Belgium		5
Telephone: +32 (0) 2 305 0698		
email: pcbvba09@penmanconsulting.com	For further information about this ODO:	
For further information about this SDS: Email: product.compliance@emeraldmaterials.com	For further information about this SDS:	

## 1.4. Emergency telephone number:

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA).

## SECTION 2: Hazards identification

## 2.1. Classification of the substance or mixture:

Product classification according to Regulation (EC) 1272/2008 (CLP) as amended:

Acute Toxicity, Oral, category 4, H302 Eye Irritation, category 2, H319 Acute Toxicity, Inhalation, category 4, H332

## 2.2. Label elements:

Product labeling according to Regulation (EC) 1272/2008 (CLP) as amended: Hazard pictogram(s):



Signal word: Warning Hazard statements: H302 Harmful if swallowed. H319 Causes serious eve irritation. H332 Harmful if inhaled. Precautionary statements: P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P264 Wash skin thoroughly after handling. P280 Wear eye protection/face protection. P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 Call a POISON CENTRE/doctor if you feel unwell. P337+P313 If eye irritation persists: Get medical advice/attention.

#### Supplemental information:

No Additional Information

Precutionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III and ECHA Guidance on Labelling and Packaging. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

## 2.3. Other hazards:

#### PBT/vPvB criteria: Other hazards:

This product does not meet the PBT and vPvB classification criteria. No Additional Information

See Section 11 for toxicological information.

## SECTION 3: Composition/information on ingredients

## 3.1. Substance:

CAS-No.	Chemical Name	Weight%	<u>Classification</u>	H Statements
0000100-51-6	Benzyl alcohol	100	Acute Tox. 4 Inhalation- Acute Tox.	H302-319-332
			4 Oral- Eye Irrit. 2	
CAS-No.	Chemical Name	Weight%	REACH Registration No.	EC/List Number
0000100-51-6	Benzyl alcohol	100	01-2119492630-38-0021	202-859-9

See Section 16 for full text of H (Hazard) statements (EC 1272/2008).

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

## **SECTION 4: First aid measures**

## 4.1. Description of first aid measures:

**General:** If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

**Eye contact:** Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If eye irritation persists: Get medical advice/attention.

**Skin contact:** Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. If skin irritation occurs: Get medical advice/attention.

**Inhalation:** If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

**Ingestion:** Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

Protection of first aid responders: Wear proper personal protective clothing and equipment.

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

Dizziness, Drowsiness, Headache, Irritation, Nausea. Preexisting sensitization, skin and/or respiratory disorders or diseases may be aggravated. See section 11 for additional information.

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

Treat symptomatically.

## **SECTION 5: Firefighting measures**

## 5.1. Extinguishing media:

**Suitable:** Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unsuitable: None known.

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

**Unusual fire/explosion hazards:** Product is not considered a fire hazard, but will burn if ignited. Product can form a flammable vapor/air mixture at temperatures at or above the flash point. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

**Hazardous combustion products:** Irritating or toxic substances will be emitted upon burning, combustion or decomposition. See section 10 (10.6 Hazardous decomposition products) for additional information.

#### 5.3. Advice for firefighters:

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

## **SECTION 6: Accidental release measures**

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

See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Eliminate ignition sources. Personal Protective Equipment must be worn.

## 6.2. Environmental precautions:

Do not flush liquid into public sewer, water systems or surface waters.

## 6.3. Methods and material for containment and cleaning up:

Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse.

#### 6.4. References to other sections:

See Section 8 for recommendations on the use of personal protection and Section 13 for waste disposal.

## **SECTION 7: Handling and storage**

## 7.1. Precautions for safe handling:

As with any chemical product, use good laboratory/workplace procedures. Do not cut, puncture, or weld on or near the container. Do not breathe dust, vapor, aerosol, mist or gas. Do not ingest, taste, or swallow. Wash thoroughly after handling

this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye and skin contact. Wash contaminated clothing before reuse. Provide eyewash fountains and safety showers in the work area.

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

Store cool and dry, under well-ventilated conditions. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Shelf life: 24 months. Avoid storage in aluminum or iron containers. Empty container contains residual product which may exhibit hazards of product. Product can easily oxidize. It is recommended that opened containers be padded with nitrogen. Protect from light.

### 7.3. Specific end use(s):

Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

## SECTION 8: Exposure controls / personal protection

#### 8.1. Control parameters:

#### Occupational exposure limits (OEL):

<u>Chemical Name</u>	<u>EU OELV</u>	<u>EU IOELV</u>	<b>ACGIH - TWA/Ceiling</b>	<u>ACGIH - STEL</u>
Benzyl alcohol	N/E	N/E	N/E	N/E
<u>Chemical Name</u> Benzyl alcohol	<u>UK WEL</u> N/E	<b>Ireland OEL</b> N/E		

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

## Derived No Effect Levels (DNELs):

#### Benzyl alcohol

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Population	Route	<u>Acute (local)</u>	Acute (systemic)	Long Term (local)	Long Term (systemic)
Workers	Inhalation	NE	110 mg/m3	N/E	22 mg/m3
Workers	Dermal	N/E	40 mg/kg bw/day	N/E	8 mg/kg bw/day
General population	Inhalation	N/E	27 mg/m3	N/E	5,4 mg/m3
General population	Dermal	N/E	20 mg/kg bw/day	N/E	4 mg/kg bw/day
General population	Oral	N/E	20 mg/kg bw/day	N/E	4 mg/kg bw/day
Humans via the environment	Inhalation	N/E	N/E	N/E	5,4 mg/m3
Humans via the environment	Oral	N/E	N/E	N/E	4 mg/kg bw/day

## Predicted No Effect Concentration (PNECs):

<u>Benzyl alcohol</u>	
Compartment	PNEC
Freshwater	1 mg/L
Freshwater sediment	5,27 mg/kg dw
Marine water	0,1 mg/L
Marine water sediment	0,527 mg/kg dw
Intermittent releases	2,3 mg/L
Soil	0,456 mg/kg dw
STP	39 mg/L
Oral	No potential for bioaccumulation

N/E=Not established; N/A=Not applicable (not required); bw=body weight; dw=dry weight; ww=wet weight.

#### 8.2. Exposure controls:

**Appropriate engineering controls:** Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS.

#### Individual protection measures, such as personal protective equipment:

#### Eye/face protection: Safety glasses or goggles required.

**Hand protection:** Avoid skin contact when mixing or handling the material by wearing impervious and chemical resistant gloves. In case of prolonged immersion or frequently repeated contact, gloves with breakthrough times greater than 240 minutes (protection class 5 or greater) are recommended. For brief contact or splash applications, gloves with breakthrough times of 10 minutes or greater are recommended (protection class 1 or greater). Suggested materials for protective gloves: Butyl rubber, PVC, Viton. Incompatible materials: neoprene / natural rubber / nitrile. The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374.

Suitability and durability of a glove is dependent on usage (e.g. frequency and duration of contact, other chemicals which may be handled, chemical resistance of glove material and dexterity). Always seek advice of the glove supplier as to the most suitable glove material.

Skin and body protection: Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

**Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment. Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the applicable exposure limit(s) of any chemical substance listed in this SDS. Gas mask with filter Type A.

Further information: Eyewash fountains and safety showers are recommended in the work area.

Environmental exposure controls: See Sections 6 and 12.

## **SECTION 9: Physical and chemical properties**

## 9.1. Information on basic physical and chemical properties:

Form:	Liquid	pH:	Not Available
Appearance:	Colorless	Relative density:	1.045 @ 25 °C
Odour:	Slight aromatic	Partition coefficient (n- octanol/water):	1.05 @ 20°C
Odour threshold:	Not Available	% Volatile by weight:	100%
Solubility in water:	40 g/L @ 25°C	VOC:	100%
Evaporation rate:	< 0.01	Boiling point °C:	205 °C @ 1013 hPa
Vapour pressure:	<1 mm Hg @ 20 °C	Boiling point °F:	401 °F @ 1013 hPa
Vapour density:	3.7 (Air=1)	Flash point:	99-100 °C (210-213 °F) Closed Cup
Viscosity:	5.8-8 cP @ 20°C	Autoignition temperature:	436 °C (817 °F)
Melting point/Freezing point:	-15.415.3 °C (4.3-4.5 °F)	Flammability (solid, gas):	Not Applicable (liquid)
Oxidising properties:	Not oxidizing	Flammability or explosive limits:	LFL/LEL: 1.3%
Explosive properties:	Not explosive		UFL/UEL: 13%
Decomposition temperature:	Not Available	Surface tension:	

## 9.2. Other information:

Amounts specified are typical and do not represent a specification.

## **SECTION 10: Stability and reactivity**

## 10.1. Reactivity:

Can react violently in contact with strong oxidizing agents, isocyanates, acetaldehyde, lithium aluminum hydride, aluminum alkyl compounds, strong mineral acids (i.e. sulfuric acid), and hydrogen bromide.

## 10.2. Chemical stability:

This product is stable. In the presence of air, benzyl alcohol will very slowly oxidize to benzaldehyde.

## 10.3. Possibility of hazardous reactions:

Hazardous polymerization will not occur.

## 10.4. Conditions to avoid:

Avoid exposure to air, moisture, ignition sources and elevated temperatures.

## 10.5. Incompatible materials:

Avoid strong acids and oxidizing agents. Avoid contact with iron and aluminum. Will attack some form of plastics.

## 10.6. Hazardous decomposition products:

Carbon dioxide and carbon monoxide. Benzaldehyde.

## **SECTION 11: Toxicological information**

#### 11.1. Information on toxicological effects:

#### Information on likely routes of exposure:

**General:** Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure. Overexposure by inhalation or ingestion may cause dizziness, drowsiness, headache, nausea, vomiting, diarrhea, convulsions, central nervous system depression and loss of consciousness.

Eyes: Causes serious eye irritation.

**Skin:** May be harmful in contact with skin. Repeated or prolonged contact may cause irritation, dermatitis, defatting and drying or cracking of the skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**Inhalation:** Harmful if inhaled. Inhalation at high vapor concentrations may cause respiratory tract irritation and central nervous effects.

Ingestion: Harmful if swallowed. Ingestion may cause nausea, vomiting and diarrhea.

Acute toxicity information: Harmful if inhaled - Category 4. Harmful if swallowed - Category 4.

Chemical Name	Inhalation LC50	Species	Oral LD50	Species	Dermal LD50	Species
Benzyl alcohol	>4178 mg/m3 (4	Rat/ adult	1620 mg/kg	Rat/ adult	N/E	N/E
	hours, aerosol)			male		

Skin corrosion/irritation: Not classified (based on available data, the classification criteria are not met).

Chemical Name	Skin irritation	Species
Benzyl alcohol	Non-irritant (OECD 404)	Rabbit/ adult
Serious eye damage/irritation: Causes s	erious eye irritation - Category 2.	

Chemical Name	Eye irritation	Species
Benzyl alcohol	Irritant (OECD 405)	Rabbit/ adult

**Respiratory or skin sensitization:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: This material has a low potential to cause allergic skin reactions, however cases of skin sensitization have been reported.

Chemical Name	Skin sensitisation	Species
Benzyl alcohol	Non-sensitizer	Weight of evidence

**Carcinogenicity:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: Under conditions of a two-year NTP gavage study, there was no evidence of carcinogenic activity for rats or mice receiving 200 or 400 mg/kg bw/day.

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: Ames testing showed no mutagenic activity and mixed results both positive and negative were observed from other in-vitro genotoxicity assays. Benzyl alcohol showed no genotoxicity during in-vivo testing. The weight of the evidence indicates this material is not mutagenic or clastogenic.

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL - READ-ACROSS: Reproductive toxicity (benzoic acid), 4-generation oral study in rats: NOAEL (no-observed adverse-effect-level) of 500 mg/kg/day. Developmental toxicity (sodium benzoate), oral, rats and mice: NOAEL of >=175 mg/kg bw/day can be established for developmental effects. Benzyl alcohol - no effects on reproductive organs were observed in subchronic and long-term studies with rats and mice.

Specific target organ toxicity (STOT) - single exposure: Not classified (based on available data, the classification criteria are not met).

Specific target organ toxicity (STOT) - repeated exposure: Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: Long term animal studies indicate a gavage NOAEL (no-observed-adverse-effect-level) >= 400 mg/kg/day for rats and >=200 mg/kg/day for mice. At higher doses, effects on bodyweights, brain lesions, thymus, skeletal muscle, kidneys, liver and central nervous system were observed. In a 4-week inhalation study in rats on Benzyl Alcohol, no adverse effects were observed with a no-observed-adverse-effect level (NOAEC) of 1072 mg/m3.

Aspiration hazard: Not classified (based on available data, the classification criteria are not met).

Other toxicity information: No additional information available.

## **SECTION 12: Ecological information**

## 12.1. Toxicity:

Chemical Name	Species	Acute	Acute	<u>Chronic</u>
Benzyl alcohol	Fish	LC50 460 mg/L (96 hours)	LC50 >100 mg/L(96 hours)	N/E
Benzyl alcohol	Invertebrates	EC50 230 mg/L (48 hours)	EC50 400 mg/L(24 hours)	NOEC 51 mg/L (21 days)
Benzyl alcohol	Algae	EC50 770 mg/L (72 hours)	N/E	NOEC 310 mg/L(72 hours)
Benzyl alcohol	Micro-organisms	EC50 390 mg/L (24 hours)		

#### 12.2. Persistence and degradability:

Chemical Name	Biodegradation
Benzyl alcohol	Readily biodegradable (OECD 301C & 301A)
12.3. Bioaccumulative potential:	
Chemical Name	Bioconcentration Factor (BCF)
Benzyl alcohol	1.37 L/kg (calculated)

#### 12.4. Mobility in soil:

Chemical Name Benzyl alcohol Mobility in soil (Koc/Kow) 15.7 (calculated)

## 12.5. Results of PBT and vPvB assessment:

This product does not meet the PBT and vPvB classification criteria.

#### 12.6. Other adverse effects:

No additional information available.

## **SECTION 13: Disposal considerations**

Log Kow 1.05 @ 20°C

#### 13.1. Waste treatment methods:

Dispose of unused contents (incineration) in accordance with national and local regulations. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate.

See Section 8 for recommendations on the use of personal protective equipment.

## **SECTION 14: Transport information**

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

14.1. UN number: N/A

## 14.2. UN proper shipping name:

Not regulated - See Bill of Lading for Details

## 14.3. Transport hazard class(es):

U.S. DOT hazard class: N/A Canada TDG hazard class: N/A Europe ADR/RID hazard class: N/A IMDG Code (ocean) hazard class: N/A ICAO/IATA (air) hazard class: N/A

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

#### 14.4. Packing group: N/A

## 14.5. Environmental hazards:

Marine pollutant: Not Applicable Hazardous substance (USA): Not Applicable

## 14.6. Special precautions for user:

Not Applicable

## 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code:

Category

Category Y

## **SECTION 15: Regulatory information**

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

**Europe REACh (EC) 1907/2006:** Applicable components are registered, exempt or otherwise compliant. REACh is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials has met its obligations under the REACh regulation. REACh information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACh obligations, depending on their place in the supply chain. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

EU Authorizations and/or restrictions on use: Not Applicable

Other EU information: No Additional Information

National regulations: No Additional Information

## Chemical inventories:

Regulation	<u>Status</u>
Australian Inventory of Chemical Substances (AICS):	Y
Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
China Inventory of Existing Chemical Substances (IECSC):	Y
European EC Inventory (EINECS, ELINCS, NLP):	Y
Japan Existing and New Chemical Substances (ENCS):	Y
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	Y
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Y
Taiwan Inventory of Existing Chemicals:	Y
U.S. Toxic Substances Control Act (TSCA) (Active):	Y
A "V" listing indicates all intentionally added components are either listed or are otherwise compliant with the requ	lation A "N" listing indicates th

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

## 15.2. Chemical safety assessment:

A chemical safety assessment has been carried out for the substance or mixture.

## **SECTION 16: Other information**

Hazard (H) Statements in the Composition section (Section 3):

H302Harmful if swallowed.H319Causes serious eye irritation.

H332 Harmful if inhaled.

Reason for revision: Changes in Section(s): 1

Evaulation method for classification of mixtures: Not Applicable (substance)

## Legend:

\* : Trademark owned by Emerald Performance Materials, LLC.

ACGIH: American Conference of Governmental Industrial Hygienists

EU OELV: European Union Occupational Exposure Limit Value

EU IOELV: European Union Indicative Occupational Exposure Limit Value

N/A: Not Applicable

N/E: None Established

STEL: Short Term Exposure Limit

TWA: Time Weighted Average (exposure for 8-hour workday)

## Users Responsibility/Disclaimer of Liability:

The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.

Safety Data Sheet Preparer: Product Compliance Department Emerald Performance Materials, LLC 1499 SE Tech Center Place, Suite 300 Vancouver, WA 98683 United States

Annex

## **Exposure Scenarios**

### Substance information:

Name of substance: Benzyl alcohol. EC# 202-859-9 / CAS# 100-51-6 REACH Registration number: 01-2119492630-38-0021

#### List of exposure scenarios:

ES1: Formulation of preparations - Industrial ES2: Formulation in materials - Industrial ES3: Formulation of preparations - Professional ES4: Use at industrial sites - Intermediates ES5: Use at industrial sites - Building & Construction/Distributors - Industrial ES6: Use at industrial sites - Adhesives and sealants, coatings and paints, thinners, paint removers, fillers, putties, plasters, modelling clay, metal and non-metal surface treatment products, ink and toners ES7: Use at industrial sites - Lubricants, greases & release products ES8: Use at industrial sites - Paper/board dye, finishing/impregnation ES9: Use at industrial sites - Photo-chemicals ES10: Use at industrial sites - Use in polymer preparations ES11: Use at industrial sites - Textile dyes, finishing/impregnation products ES12: Use at industrial sites - Washing & cleaning products - Cosmetic & personal care products ES13: Use at industrial sites - Industrial use as laboratory reagent ES14: Use by professional workers - Professional use - Indoor ES15: Use by professional workers - Professional use - Outdoor ES16: Use by professional workers - Professional use as laboratory reagent ES17: Consumer use - Consumer uses

#### General remarks:

The first tier environmental exposure assessments have at first instance been performed using EUSES 2.1.2 which is part of Chemical Safety Assessment and Reporting tool version 2.2 (CHESAR v2.2). Higher tier assessments have been performed if safe use was not demonstrated using first tier assessments. In these cases Specific Environmental Release Categories (SpERCs) have been used or release fractions have been defined according to the A&B-tables in Appendix 1 of the Technical Guidance Document on Risk Assessment, Part II (2003).

The first tier worker exposure assessments have at first instance been performed using Worker TRA v3 which is part of Chemical Safety Assessment and Reporting tool version 2.2 (CHESAR v2.2). For some worker contributing scenarios worker exposure assessments have been performed using ECETOC TRA version 3 (ECETOC TRA v3) and the Advanced REACH Tool (ART v1.5) (inhalation exposures). The RiskofDerm Tier 2 model was used to refine dermal exposure estimates, if necessary. The most critical hazard assessment conclusions for benzyl alcohol are the available derived no-effect levels (DNELs) for acute and long-term systemic effects via inhalation and dermal route.

Benzyl alcohol is classified with Eye Irrit 2; H319 ("Causing serious eye irritation") and, therefore, the hazard assessment conclusion for benzyl alcohol for effects on eyes is "Low hazard (no threshold derived)". Adequate Risk Management Measures (RMMs) and Operational Conditions (OCs) have to be applied to ensure that low hazard substances can be used safely. Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks

- Work procedures minimising splashes and spills

- Avoidance of contact with contaminated tools and objects

- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

For consumers the most critical hazard assessment conclusions for benzyl alcohol are the available derived no-effect levels (DNELs) for acute and long-term systemic effects via inhalation, dermal and oral route. Therefore quantitative assessments regarding acute and long-term systemic inhalation, dermal and oral exposure have been performed. For all consumer contributing scenarios second tier consumer exposure assessments have been performed using ConsExpo v4.1.

#### Exposure scenario (1): Formulation of preparations - Industrial

1. Exposure scenario (1)

#### Short title of the exposure scenario:

Formulation of preparations - Industrial

#### List of use descriptors:

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC19, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13. Environmental release category (ERC): ERC2 (SpERC: ESVOC 2.2.v1)

#### List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC13 Treatment of articles by dipping and pouring.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation into mixture.

#### Further explanations:

Formulation of solvent-borne substances encompasses a wide range of activities such as transfers, mixing, tabletting, compression, pelletilisation and sampling. Substance losses are reduced through use of general and site-specific risk management measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs; and through use of closed or covered equipment/ processes to minimize evaporative losses of VOCs. Substance losses to waste water are generally restricted to equipment cleaning as processes operate without contact with water Such uses and substance properties result in limited to no discharge to wastewater or to soil from the industrial site.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

#### 2. Conditions of use affecting exposure 2.1 Control of workers exposure General: Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows: - Minimisation of manual phases/work tasks - Work procedures minimising splashes and spills - Avoidance of contact with contaminated tools and objects - Regular cleaning of equipment and work area - Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed - Training for staff on good practice - Good standard of personal hygiene Product characteristics: Concentration of substance: Up to 100%. Physical state: liquid.

Frequency and duration of use/exposure:	Duration: <=8 hours/day.
Human factors not influenced by risk	Exposed skin surface:
management:	- PROC1, PROC3: 240 cm2 (one hand, face side only).
	<ul> <li>PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm2 (two hands, face side only).</li> <li>PROC8a, PROC8b: 960 cm2 (two hands).</li> </ul>
Other given operational conditions affecting	Location: Indoor use.
workers exposure:	Domain: Industrial use.
<b>-</b> − − − − − − − − − − − − − − − − − − −	Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.
dispersion from source towards the worker:	Containment:
	- PROC1: Closed system (minimal contact during routine operations).
	- PROC2: Closed continuous process with occasional controlled exposure.
	- PROC3: Closed batch process with occasional controlled exposure.
	- PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.
	- PROC5, PROC8a, PROC13: No.
	Local exhaust ventilation:
	- PROC1, PROC2, PROC3: Not required.
	- PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness).
	- PROC8b: Yes (95% effectiveness).
	Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal	Respiratory protection: Not required.
protection, hygiene and health evaluation:	Chemical safety goggles.
	Dermal protection:
	- PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).
	- PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves
	conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practice advice. Obligations	Generally accepted standards of occupational hygiene are maintained.
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks.
apply:	Minimisation of splashes and spills.
	Avoidance of contact with contaminated tools and objects.
	Regular cleaning of equipment and work area.
	Training staff on good practice.
	Management/supervision in place to check that RMMs in place are being used correctly and
	OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid.
	Vapour pressure: 7 Pa at 20 °C
Amounts used:	Maximum daily use at a site: 70 ton/day.
	Maximum annual use at a site: 1450 tons/year.
	Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 300 days/year.
Environmental factors not influenced by risk	Flow rate of receiving surface water: >=18,000 m3/day (default).
management:	
Other given operational conditions affecting	Indoor use.
environmental exposure:	Industrial use.
	Release fraction to air from process (initial release): 0.0025; (final release): 0.00125. Local
	release rate: 87.5 kg/day (SpERC ESVOC 2.2.v1).
	Release fraction to wastewater from process (initial release): 0.005; (final release): 0.0015.
	Local release rate: 105 kg/day (SpERC ESVOC 2.2.v1).
	Release fraction to soil from process (final release): 0.0001 (SpERC ESVOC 2.2.v1).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:		<ul> <li>Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release).</li> <li>Dry sludge application to agricultural soil: Yes (default).</li> <li>On-site treatment of off-air: Typical measures to maintain workplace concentrations or airborne VOCs and particulates below respective OELS (e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption). Upgrade of the system in place or additional air treatment measures (Upgrade of the system in place or addition and/or vapour recovery systems, in order to achieve a reduction of the air emissions.) (Effectiveness Air: 50%).</li> <li>On-site treatment of wastewater: Acclimated biological treatment (Effectiveness Water: 70%).</li> <li>Equipment cleaning: No release to wastewater from process as such, wastewater emissions limited to release generated from final equipment cleaning step using water.</li> </ul>				
Conditions and measures related		nicipal Sewage Treatment Pla				
sewage treatment plant:	Siz	e of municipal sewage system	/treatment plant: >=20	000 m3/day (standard town).		
Conditions and measures related treatment of waste for disposal:	as	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)				
Conditions and measures related	to external Ex	ternal recovery and recycling of	of waste should compl	y with applicable local and/or national		
recovery of waste:	reg	julations.				
Additional good practice advice. C according to Article 37(4) of REAC apply:	-	risk management measures u	tilised must also comp	bly with all relevant local regulations.		
3. Exposure estimation and refere	nce to its source					
Health						
Information for contributing scenari	o (1): PROC2, PRO	C3, PROC5, PROC8a, PROC	8b, PROC13			
Assessment method: CHESAR V2	.2 Worker TRA v3.	Only highest figures are preser	nted here.			
Exposure estimation:						
	Route	Exposure estimate	RCR	<u>Notes</u>		
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/day	0,171	PROC2, PROC5, PROC8a, PROC8b, PROC13		
Worker, long-term, systemic	Inhalation	13,52 mg/m3	0,614	PROC3		
Worker, long-term, systemic	Combined routes	N/A	0,701	PROC3		
Worker, acute, systemic	Dermal	1,371 mg/kg bw/day	0,034	PROC2, PROC5, PROC8a, PROC8b, PROC13		
				110000,110010		
Worker, acute, systemic	Inhalation	54,07 mg/m3	0,492	PROC3		
Worker, acute, systemic Worker, acute, systemic	Inhalation Combined routes	54,07 mg/m3 N/A	0,492 0,509			
Worker, acute, systemic		· /· <b>·</b>	-,	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2	Combined routes o (2): ERC2 (SpER)	N/A	-,	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation:	Combined routes o (2): ERC2 (SpER 2.	N/A C ESVOC 2.2.v1)	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment	Combined routes o (2): ERC2 (SpER 2. PEC	N/A C ESVOC 2.2.v1) <u>RCR</u>	-,	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater	Combined routes o (2): ERC2 (SpER 2. PEC 0,667 mg/L	N/A C ESVOC 2.2.v1) RCR 0,667	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment	Combined routes o (2): ERC2 (SpER 2. PEC	N/A C ESVOC 2.2.v1) <u>RCR</u>	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater	Combined routes o (2): ERC2 (SpER 2. PEC 0,667 mg/L	N/A C ESVOC 2.2.v1) RCR 0,667	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment	Combined routes o (2): ERC2 (SpER 2. <u>PEC</u> 0,667 mg/L 3,449 mg/kg dw	N/A C ESVOC 2.2.v1) RCR 0,667 0,654	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment Marine water	Combined routes o (2): ERC2 (SpER 2: PEC 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L	N/A C ESVOC 2.2.v1) RCR 0,667 0,654 0,667	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment Marine water Marine water sediment	Combined routes o (2): ERC2 (SpER 2. <u>PEC</u> 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L 0,345 mg/kg dw	N/A C ESVOC 2.2.v1) RCR 0,667 0,654 0,667 0,654	0,509	PROC3		
Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment Marine water Marine water sediment Soil	Combined routes o (2): ERC2 (SpER)  PEC 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L 0,345 mg/kg dw 0,223 mg/kg dw	N/A C ESVOC 2.2.v1) RCR 0,667 0,654 0,667 0,654 0,654 0,49 0,17	0,509	PROC3		

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational
	Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions
	are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator
	required. Duration of activity: <=8 hours/day. PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Wear
	chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation:
	PROC1, PROC2, PROC3: Not required. PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness).
	PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low
	hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: Up to 100%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be
	necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater
	can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of
	unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Exposure scenario	o (2): Formulation in materials - Industrial
•	

#### 1. Exposure scenario (2)

#### Short title of the exposure scenario:

Formulation in materials - Industrial

#### List of use descriptors:

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC19, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13.

Environmental release category (ERC): ERC3

## List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC13 Treatment of articles by dipping and pouring.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC3 Formulation into solid matrix.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

#### 2. Conditions of use affecting exposure

2.1 Control of workers exposure	
General:	<ul> <li>Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:</li> <li>Minimisation of manual phases/work tasks</li> <li>Work procedures minimising splashes and spills</li> <li>Avoidance of contact with contaminated tools and objects</li> <li>Regular cleaning of equipment and work area</li> <li>Management/supervision in place to check that the RMMs in place are being used correctl and OCs are followed</li> </ul>
	- Training for staff on good practice - Good standard of personal hygiene
Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid.
Frequency and duration of use/exposure:	Duration: <=8 hours/day.
Human factors not influenced by risk	Exposed skin surface:
management:	- PROC1, PROC3: 240 cm2 (one hand, face side only).
	- PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm2 (two hands, face side only).
	- PROC8a, PROC8b: 960 cm2 (two hands).

Other given operational conditions affecting	Location: Indoor use.		
workers exposure:	Domain: Industrial use.		
	Process temperature (for liquid): <= 40 °C.		
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.		
dispersion from source towards the worker:	Containment:		
	- PROC1: Closed system (minimal contact during routine operations).		
	- PROC2: Closed continuous process with occasional controlled exposure.		
	<ul> <li>PROC3: Closed batch process with occasional controlled exposure.</li> </ul>		
	- PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.		
	- PROC5, PROC8a, PROC13: No.		
	Local exhaust ventilation:		
	- PROC1, PROC2, PROC3: Not required.		
	- PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness).		
	- PROC8b: Yes (95% effectiveness).		
	Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal	Respiratory protection: Not required.		
protection, hygiene and health evaluation:	Chemical safety goggles.		
	Dermal protection:		
	- PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).		
	- PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves		
	conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).		
Additional good practice advice. Obligations	Generally accepted standards of occupational hygiene are maintained.		
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks.		
apply:	Minimisation of splashes and spills.		
,	Avoidance of contact with contaminated tools and objects.		
	Regular cleaning of equipment and work area.		
	Training staff on good practice.		
	Management/supervision in place to check that RMMs in place are being used correctly and		
	OCs followed.		
2.2 Control of environmental exposure			
Product characteristics:	Physical state: liquid.		
	Vapour pressure: 7 Pa at 20 °C		
Amounts used:	Maximum daily use at a site: 1.5 ton/day.		
Amounte used.	Maximum annual use at a site: 150 tons/year.		
	Percentage of tonnage used at regional scale: 10 %.		
Frequency and duration of use:	Emission days: 100 days/year.		
Environmental factors not influenced by risk	Flow rate of receiving surface water: >=18,000 m3/day (default).		
management:	Flow fate of receiving sufface water. ~- 18,000 m3/day (default).		
Other given operational conditions affecting	Indoor use.		
environmental exposure:	Release fraction to air from process (initial release): 0.30; (final release): 0.30. Local release		
	rate: 450 kg/day.		
	Release fraction to wastewater from process (initial release): 0.002; (final release): 0.002.		
	Local release rate: 3 kg/day.		
	Release fraction to soil from process (final release): 0.001.		
Technical onsite conditions and measures to	Dry sludge application to agricultural soil: Yes (default).		
	bry shuage application to agricultulal soll. Tes (deladit).		
reduce or limit discharges, air emissions and releases to soil:			
	Municipal Courses Treatment Digit (OTD): Very (Effective C7.000())		
Conditions and measures related to municipal	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%).		
sewage treatment plant:	Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).		
Conditions and measures related to external	Particular considerations on the waste treatment operations: No (low risk) (ERC based		
treatment of waste for disposal:	assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)		
Conditions and measures related to external	External recovery and recycling of waste should comply with applicable local and/or national		
recovery of waste:	regulations.		
Additional good practice advice. Obligations	All risk management measures utilised must also comply with all relevant local regulations.		
according to Article 37(4) of REACH do not			
apply:			
<ol><li>Exposure estimation and reference to its sour</li></ol>	Ce		
lealth			

Information for contributing scenario (1): PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC13.

### Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here.

#### Exposure estimation:

	<u>Route</u>	Exposure estimate	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/day	0,171	PROC2, PROC5, PROC8a, PROC8b, PROC13
Worker, long-term, systemic	Inhalation	13,52 mg/m3	0,614	PROC3
Worker, long-term, systemic	Combined routes	N/A	0,701	PROC3
Worker, acute, systemic	Dermal	1,371 mg/kg bw/day	0,034	PROC2, PROC5, PROC8a, PROC8b, PROC13
Worker, acute, systemic	Inhalation	54,07 mg/m3	0,492	PROC3
Worker, acute, systemic	Combined routes	N/A	0,509	PROC3
Environment				
nformation for contributing scenari	o (2): ERC3			
Assessment method: EUSES 2.1.2	<u>)</u>			
Exposure estimation:				
<u>Compartment</u>	PEC	<u>RCR</u>	<u>Notes</u>	
Freshwater	0,023 mg/L	0,023		
Freshwater sediment	0,117 mg/kg dw	0,022		
Marine water	0,00227 mg/L	0,023		
Marine water sediment	0,012 mg/kg dw	0,022		
Soil	0,019 mg/kg dw	0,042		
STP	0,19 mg/L	<0,01		
Man via environment	0,034 mg/m3 / 0,0 bw/day	37 mg/kg <0,01 / <0,0	1 Inhalation / Ora	al
Man via environment-Combined routes	N/A	0,016		
RCR=Risk characterization ratio (F	PEC/PNEC or Exposu	ure estimate/DNEL); PEC=I	Predicted environme	ntal concentration.
. Guidance to the Downstream U	ser to evaluate whet	her he works inside the bo	undaries set by the	ES
Conditio are adop required chemica PROC1, PROC8 hazard s	ns outlined in Section oted, then users shou . Duration of activity I resistant gloves (tes PROC2, PROC3: N D: Yes (95% effective substance which caus	n 2 are implemented. When Ild ensure that risks are ma : <=8 hours/day. PROC4, P sted to EN 374) in combination ot required. PROC4, PROC eness). Personal protective ses serious eye irritation: C	e other Risk Manage naged to at least equ ROC5, PROC8a, PF ion with basic emplo 5, PROC8a, PROC9 equipment (PPE) the hemical goggles. Co	Management Measures/Operational ment Measures/Operational Conditions vivalent levels. Indoor use, no respirator ROC8b, PROC9, PROC13: Wear yee training. Local exhaust ventilation: 0, PROC13: Yes (90% effectiveness). at has to be applied when using a low oncentration of substance: Up to 100%.
necessa can be a	ry to define appropria chieved using onsite	ate site-specific risk manag	ement measures. Re alone or in combinat	cable to all sites; thus, scaling may be equired removal efficiency for wastewate tion. If scaling reveals a condition of ety assessment is required.

1. Exposure scenario (3)

Short title of the exposure scenario:

Formulation of preparations - Professional

### List of use descriptors:

Product category (PC): PC0, PC1, PC3, PRC8, PC9a, PC9b, PC14, PC15, PC18, PC19, PC20, PR21, PRC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC19.

Environmental release category (ERC): ERC2

## List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC13 Treatment of articles by dipping and pouring.

PROC19 Manual activities involving hand contact. Addresses tasks, where exposure of hands and forearms can be expected; no dedicated tools or specific exposure controls other than PPE can be put in place.

## Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation into mixture.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

2. Conditions of use affecting exposure	
2.1 Control of workers exposure	
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows: - Minimisation of manual phases/work tasks
	- Work procedures minimising splashes and spills
	- Avoidance of contact with contaminated tools and objects
	<ul> <li>Regular cleaning of equipment and work area</li> </ul>
	<ul> <li>Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed</li> </ul>
	- Training for staff on good practice
	- Good standard of personal hygiene
Product characteristics:	Concentration of substance: - PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Up to 100%. - PROC19: <=20%. Physical state: liquid.
	Vapour pressure: <7 Pa at 20 °C
Frequency and duration of use/exposure:	Duration: - PROC1, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13: <=8 hours/day. - PROC2, PROC8a: <=4 hours/day. - PROC19: 15 minutes - 1 hour/day.
Human factors not influenced by risk	Exposed skin surface:
management:	<ul> <li>PROC1, PROC3: 240 cm2 (one hand, face side only).</li> <li>PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm2 (two hands, face side only).</li> <li>PROC8a, PROC8b: 960 cm2 (two hands).</li> </ul>
Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Professional use. Process temperature (for liquid): <= 40 °C. Assessment tool used: PROC19: ECETOC TRA v3 for inhalation and dermal exposure. Deviation from ECETOC TRA: yes, a linear concentration reduction approach is used. The concentration of the substance in the product is taken into account following a linear
	concentration reduction approach instead of the default ECETOC TRA factors for modifying exposure due to percentage of substance in preparation.

Technical conditions and measures to control dispersion from source towards the worker:	<ul> <li>General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.</li> <li>Containment: <ul> <li>PROC1: Closed system (minimal contact during routine operations).</li> <li>PROC2: Closed continuous process with occasional controlled exposure.</li> <li>PROC3: Closed batch process with occasional controlled exposure.</li> <li>PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.</li> <li>PROC5, PROC8a, PROC13, PROC19: No.</li> </ul> </li> <li>Local exhaust ventilation: <ul> <li>PROC1, PROC2, PROC19: Not required.</li> <li>PROC3, PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (80% effectiveness).</li> <li>PROC8b: Yes (90% effectiveness).</li> </ul> </li> <li>Occupational Health and Safety Management System: Basic.</li> </ul>
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROC1, PROC3: No (Effectiveness Dermal: 0%). - PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC19: Gloves APF 10 (minimum efficiency dermal: 90%).
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
Amounts used:	Maximum daily use at a site: 2 ton/day. Maximum annual use at a site: 200 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 100 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Indoor use. Professional use. Release fraction to air from process (initial release): 0.025; (final release): 0.025. Local release rate: 50 kg/day. Release fraction to wastewater from process (initial release): 0.02; (final release): 0.02. Local release rate: 40 kg/day. Release fraction to soil from process (final release): 0,0001.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%).
sewage treatment plant:	Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external	External recovery and recycling of waste should comply with applicable local and/or national
recovery of waste:	regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.
3. Exposure estimation and reference to its sour Health	
Information for contributing scenario (1): PROC2.	PROC8a PROC19

Information for contributing scenario (1): PROC2, PROC8a, PROC19

Assessment method: CHESAR v2.2 Worker TRA v3. PROC19 only: ECETOC TRA Worker v3. Only highest figures are presented here.

	<u>Route</u>	Exposure	estimate	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	2,82 mg/k	g bw/day	0,353	PROC19
Worker, long-term, systemic	Inhalation	13,52 mg/	/m3	0,614	PROC2, PROC8a
Worker, long-term, systemic	Combined routes	N/A		0,957	PROC8a
Worker, acute, systemic	Dermal	2,82 mg/k	g bw/day	0,07	PROC19
Worker, acute, systemic	Inhalation	90,2 mg/n	n3	0,82	PROC19
Worker, acute, systemic	Combined routes	N/A		0,891	PROC19
Environment					
<u>Compartment</u>	PEC		RCR	<u>Notes</u>	
Exposure estimation:	BEO		505	No.4	
Freshwater	0,256 mg/L		0,256		
Freshwater sediment	1,326 mg/kg dw		0,252		
Marine water	0,026 mg/L		0,256		
Marine water sediment	0,133 mg/kg dw		0,252		
Soil	0,09 mg/kg dw		0,198		
STP	2,527 mg/L		0,065		
Man via environment	0,004 mg/m3 / 0,00 bw/day	07 mg/kg	<0,01 / <0,01	Inhalation / Oral	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

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

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator required. Duration of activity: PROC1, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13: <=8 hours/day. PROC2, PROC8a: <=4 hours/day. PROC19: 15 minutes - 1 hour/day. PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves conforming) (Effectiveness Dermal: 80%). PROC19: Gloves APF 10 (minimum efficiency dermal: 90%). Local exhaust ventilation: PROC1, PROC2, PROC49: Not required. PROC3, PROC4, PROC5, PROC8a, PROC9, PROC13: Yes ( 80% effectiveness). PROC8b: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8a, PROC8b, PROC9, PROC13: Up to 100%. PROC19: <=20%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Exposure scenario (4): Use at industrial sites - Intermediates

1. Exposure scenario (4)

## Short title of the exposure scenario:

#### Use at industrial sites - Intermediates

List of use descriptors:

Sector of use category (SU): SU8, SU9

Product category (PC): PC19

Process category (PROC): PROC1, PROC2, PROC3, PROC8b, PROC9.

Environmental release category (ERC): ERC6a

## List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

## Name of contributing environmental scenario and corresponding ERCs:

## ERC6a Use of intermediate.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

Personal protective equipment (PPE) that has to be applied when using a low hazard			
substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that			
have to be applied when using a low hazard substance are as follows:			
- Minimisation of manual phases/work tasks			
<ul> <li>Work procedures minimising splashes and spills</li> </ul>			
<ul> <li>Avoidance of contact with contaminated tools and objects</li> </ul>			
<ul> <li>Regular cleaning of equipment and work area</li> </ul>			
- Management/supervision in place to check that the RMMs in place are being used correct			
and OCs are followed			
- Training for staff on good practice			
- Good standard of personal hygiene			
Concentration of substance: Up to 100%.			
Physical state: liquid.			
Vapour pressure at elevated temperature:<381 Pa.			
Duration: <=8 hours/day.			
Exposed skin surface:			
- PROC1, PROC3: 240 cm2 (one hand, face side only).			
- PROC2, PROC9: 480 cm2 (two hands, face side only).			
- PROC8b: 960 cm2 (two hands).			
Location: Indoor use.			
Domain: Industrial use.			
Process temperature (for liquid):			
- PROC1, PROC2, PROC3: <=180°C.			
- PROC8b, PROC9:<= 40 °C.			
General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment:			
- PROC1: Closed system (minimal contact during routine operations).			
- PROC2: Closed continuous process with occasional controlled exposure.			
- PROC3: Closed batch process with occasional controlled exposure.			
- PROC8b, PROC9: Semi-closed process with occasional controlled exposure.			
Local exhaust ventilation:			
- PROC1, PROC2, PROC3: Not required.			
- PROC9: Yes (90% effectiveness).			
- PROC8b: Yes (95% effectiveness).			
Occupational Health and Safety Management System: Advanced.			
Respiratory protection: Not required.			
Chemical safety goggles.			
Dermal protection:			
<ul> <li>PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).</li> </ul>			
<ul> <li>PROC8b, PROC9: Yes (chemically resistant gloves conforming to EN374 with basic</li> </ul>			
- PROC8b, PROC9: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).			
employee training) (Effectiveness Dermal: 90%).			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice.			
employee training) (Effectiveness Dermal: 90%). Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and			

	Μ	aximum daily ι	use at a site: 5 ton	/day.		
		Maximum annual use at a site: 100 tons/year.				
		Percentage of tonnage used at regional scale: 10 %. Emission days: 100 days/year.				
Frequency and duration of use:		-				
Environmental factors not influer management:	-	ow rate of rece	eiving surface wate	er: >=18,000 m3/da	ay (detault).	
Other given operational condition	-	door use.	4			
environmental exposure:		elease fraction ite: 250 kg/day		ss (initial release): (	0.05; (final release): 0.05. Local release	
		0,		m process (initial r	elease): 0.02; (final release): 0.02.	
			te: 100 kg/day.			
				ess (final release): (		
Technical onsite conditions and reduce or limit discharges, air en releases to soil:		ry sludge appli	cation to agricultu	ral soil: Yes (defau	(t).	
Conditions and measures related	to municipal M	unicipal Sewag	ge Treatment Plan	t (STP): Yes ( Effic	siency=87.36%).	
sewage treatment plant:		-			2000 m3/day (standard town).	
Conditions and measures related				•	rations: No (low risk) (ERC based	
treatment of waste for disposal:			-		t conditions. Low risk assumed for Il/local legislation is sufficient.)	
Conditions and measures related			•		ply with applicable local and/or nationa	
recovery of waste:		gulations.	y and recycling of			
Additional good practice advice.	-	ll risk manager	nent measures uti	lised must also cor	nply with all relevant local regulations.	
according to Article 37(4) of REA	CH do not					
apply:						
3. Exposure estimation and reference	ence to its source					
Health	ria (1): DD002 DD					
Information for contributing scena				ad horo		
Assessment method: CHESAR V				ed here.		
-	2.2 Worker TRA v3.	Only highest f	igures are present		Notes	
Assessment method: CHESAR V Exposure estimation:	2.2 Worker TRA v3.	Only highest f	igures are present estimate	RCR	Notes PROC2_PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic	2.2 Worker TRA v3. Route Dermal	Only highest f <u>Exposure</u> 1,371 mg/k	igures are present estimate <g bw="" day<="" td=""><td><u>RCR</u> 0,171</td><td>PROC2, PROC8b</td></g>	<u>RCR</u> 0,171	PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation	Only highest f Exposure 1,371 mg/k 13,52 mg/r	igures are present estimate <g bw="" day<="" td=""><td><b>RCR</b> 0,171 0,614</td><td>PROC2, PROC8b PROC3</td></g>	<b>RCR</b> 0,171 0,614	PROC2, PROC8b PROC3	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route	Only highest f Exposure 1,371 mg/k 13,52 mg/r s N/A	igures are present <b>estimate</b> kg bw/day n3	RCR 0,171 0,614 0,701	PROC2, PROC8b PROC3 PROC3	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034</td><td>PROC2, PROC8b PROC3 PROC3 PROC3 PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034	PROC2, PROC8b PROC3 PROC3 PROC3 PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034           0,492</td><td>PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034           0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034</td><td>PROC2, PROC8b PROC3 PROC3 PROC3 PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034	PROC2, PROC8b PROC3 PROC3 PROC3 PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034           0,492</td><td>PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034           0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Combined route           Inhalation           Combined route           Inhalation           Combined route	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034           0,492</td><td>PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034           0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Combined route           Inhalation           Combined route           Inhalation           Combined route	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034           0,492</td><td>PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034           0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Combined route           Inhalation           Combined route           Inhalation           Combined route	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate <g bw="" day<br="">n3 <g bw="" day<="" td=""><td>RCR           0,171           0,614           0,701           0,034           0,492</td><td>PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b</td></g></g>	RCR           0,171           0,614           0,701           0,034           0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation:	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Inhalation           Combined route           Inhalation           Combined route           rio (2): ERC6a           2.	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate kg bw/day n3 kg bw/day n3	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment	2.2 Worker TRA v3.          Route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         rio (2): ERC6a         .2.	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate (g bw/day n3 (g bw/day n3 RCR	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment Freshwater	2.2 Worker TRA v3.          Route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         rio (2): ERC6a         .2.         PEC         0,636 mg/L	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate kg bw/day m3 kg bw/day m3 RCR 0,636	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment Freshwater Freshwater sediment	2.2 Worker TRA v3.           Route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           Dermal           Inhalation           Combined route           rio (2): ERC6a           2.           PEC           0,636 mg/L           3,285 mg/kg dw	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate (g bw/day n3 (g bw/day n3 RCR 0,636 0,623	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment Freshwater Freshwater Freshwater Marine water	2.2 Worker TRA v3.          Route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Ocombined route         rio (2): ERC6a         .2.         PEC         0,636 mg/L         3,285 mg/kg dw         0,064 mg/L	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate (g bw/day m3 (g bw/day m3 (g bw/day m3 (g bw/day m3 (g bw/day (g bw/day (g bw/day) (g bw/day (g bw/day) (g bw/day)	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment Freshwater Freshwater Freshwater Stement Marine water sediment	2.2 Worker TRA v3.          Route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         rio (2): ERC6a         2.         PEC         0,636 mg/L         3,285 mg/kg dw         0,064 mg/L         0,329 mg/kg dw	Only highest f <u>Exposure</u> 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r	igures are present estimate kg bw/day m3 kg bw/day m3 RCR 0,636 0,623 0,636 0,623	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC2, PROC8b	
Assessment method: CHESAR V Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scena Assessment method: EUSES 2.1 Exposure estimation: Compartment Freshwater Freshwater Freshwater sediment Marine water sediment Soil	2.2 Worker TRA v3.          Route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         Dermal         Inhalation         Combined route         rio (2): ERC6a         .2.         PEC         0,636 mg/L         3,285 mg/kg dw         0,064 mg/L         0,329 mg/kg dw         0,213 mg/kg dw	Only highest f Exposure 1,371 mg/k 13,52 mg/r s N/A 1,371 mg/k 54,07 mg/r s N/A	igures are present estimate (g bw/day n3 (g bw/day (g bw/day n3 (g bw/day (g bw/day (g bw/day) (g bw/day (g bw/day) (g bw/day (g bw/day) (g bw/da	RCR         0,171         0,614         0,701         0,034         0,492         0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3	

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

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator required. Duration of activity: <=8 hours/day. PROC8b, PROC9: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC1, PROC2, PROC3: Not required. PROC9: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: Up to 100%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Exposure scenario	(5): Use at industrial sites - Building & Construction/Distributors - Industrial

## 1. Exposure scenario (5)

## Short title of the exposure scenario:

Use at industrial sites - Building & Construction/Distributors - Industrial

#### List of use descriptors:

Sector of use category (SU): SU19

Product category (PC): PC0

Process category (PROC): PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14.

Environmental release category (ERC): ERC4 (SpERC: EFCC 4)

#### List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

## Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

## 2. Conditions of use affecting exposure

2.1 Control of workers exposure					
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard				
	substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that				
	have to be applied when using a low hazard substance are as follows:				
	- Minimisation of manual phases/work tasks				
	- Work procedures minimising splashes and spills				
	- Avoidance of contact with contaminated tools and objects				
	- Regular cleaning of equipment and work area				
	- Management/supervision in place to check that the RMMs in place are being used correctly				
	and OCs are followed				
	- Training for staff on good practice				
	- Good standard of personal hygiene				
Product characteristics:	Concentration of substance: Up to 100%.				
	Physical state: liquid.				
Frequency and duration of use/exposure:	Duration: <=8 hours/day.				
Human factors not influenced by risk	Exposed skin surface:				
management:	- PROC5, PROC9, PROC13, PROC14: 480 cm2 (two hands, face side only).				
	- PROC8a, PROC8b, PROC10: 960 cm2 (two hands).				

Worker, long-term, systemic	Dermal	3,43 mg/kg bw/day	0,429	PROC14		
	Route	Exposure estimate	RCR	<u>Notes</u>		
Exposure estimation:						
Assessment method: CHESAR V2			ented here.			
Information for contributing scenar	rio (1): PROC8a	a, PROC10, PROC13, PROC14				
Health						
3. Exposure estimation and refere	ence to its sour	ce				
apply:						
Additional good practice advice. ( according to Article 37(4) of REA	-	All risk management measures	uulised must also c	comply with all relevant local regulations.		
recovery of waste:	Obligation -	regulations.				
Conditions and measures related	to external		of waste should co	omply with applicable local and/or national		
• IIII				nal/local legislation is sufficient.)		
treatment of waste for disposal:		assessment demonstrating con	trol of risk with defa	ult conditions. Low risk assumed for		
Conditions and measures related	to external			perations: No (low risk) (ERC based		
sewage treatment plant:	- <b>F</b>			>=2000 m3/day (standard town).		
Conditions and measures related	to municipal	Municipal Sewage Treatment P	lant (STP): Yes ( Ef	fficiency=87.36%).		
releases to soil:						
reduce or limit discharges, air em		by sludge application to agricu	iturai soli. Tes (uela	auny.		
Technical onsite conditions and n	nonsures to	Release fraction to soil from pro Dry sludge application to agricu				
		release rate: 0 kg/day (SpERC	· ·			
				l release): 0.0; (final release): 0.0. Local		
environmental exposure:	Ŭ	release rate: 1340 kg/day (SpEl	, ,			
Other given operational condition	is affecting	Release fraction to air from proc	cess (initial release)	): 0.985; (final release): 0.985. Local		
management:	ueu by HSK	now rate of receiving sufface w	ater 10,000 m3/	uay (uelaul).		
Frequency and duration of use: Environmental factors not influen	ced by rick	Emission days: 220 days/year. Flow rate of receiving surface w	ator: >=18 000 m2	(day (default)		
Frequency and duration of user		Percentage of tonnage used at	regional scale: 10 %	/0.		
		Maximum annual use at a site:		<i>N</i>		
Amounts used:		Maximum daily use at a site: 1.3	•			
		Vapour pressure: 7 Pa at 20 °C				
Product characteristics:		Physical state: liquid.				
2.2 Control of environmental expo	sure					
		OCs followed.				
			ce to check that RM	IMs in place are being used correctly and		
		Regular cleaning of equipment a Training staff on good practice.	and work area.			
		Avoidance of contact with conta		objects.		
apply:		Minimisation of splashes and sp				
according to Article 37(4) of REA	CH do not	Minimisation of manual phases/				
Additional good practice advice.	•	Generally accepted standards of	of occupational hygi	ene are maintained.		
				raining) (Effectiveness Dermal: 90%).		
		<ul> <li>PROC14: No (Effectiveness D</li> <li>PROC5. PROC8a. PROC8b. I</li> </ul>	,	PROC13: Yes (chemically resistant		
		Dermal protection:	$\alpha$			
protection, hygiene and health ev	aluation:	Chemical safety goggles.				
Conditions and measures related	to personal	Respiratory protection: Not requ	iired.			
		Occupational Health and Safety		em: Advanced.		
		- PROC8b: Yes (95% effectiver				
			ROC10 PROC13	PROC14: Yes (90% effectiveness).		
		<ul> <li>PROC5, PROC8a, PROC10, I Local exhaust ventilation:</li> </ul>	PROC13, PROC14	: No.		
		- PROC8b, PROC9: Semi-close	•	•		
dispersion from source towards the	he worker:	Containment:				
Technical conditions and measur	es to control	General ventilation: Basic gene		air changes per hour): 0%.		
workers exposure:		Process temperature (for liquid)	: <= 40 °C.			
		Location: Indoor use. Domain: Industrial use.				

	<u>Route</u>	Exposure estimate	RCR	<u>Notes</u>
Worker, long-term, systemic	Inhalation	4,506 mg/m3	0,205	PROC8a, PROC10, PROC13
Worker, long-term, systemic	Combined routes	N/A	0,548	PROC10
Worker, acute, systemic	Dermal	3,43 mg/kg bw/day	0,086	PROC14
Worker, acute, systemic	Inhalation	18,02 mg/m3	0,164	PROC8a, PROC10, PROC13
Worker, acute, systemic	Combined routes	N/A	0,232	PROC10
Environment				
Information for contributing sce	.,	C: EFCC 4)		
Assessment method: EUSES 2	.1.2.			
Exposure estimation:				
<u>Compartment</u>	PEC	RCR	<u>Notes</u>	
Freshwater	0,00372 mg/L	<0,01		
Freshwater sediment	0,019 mg/kg dw	<0,01		
Marine water	0,000371 mg/L	<0,01		
Marine water sediment	0,00192 mg/kg dv	<i>w</i> <0,01		
Soil	0,043 mg/kg dw	0,095		
STP	0 mg/L	0		
Man via environment	0,225 mg/m3 / 0,2 bw/day	237 mg/kg 0,042 / 0,059	Inhalation / Ora	al
Man via environment-Combine routes	ed N/A	0,101		
RCR=Risk characterization ratio	o (PEC/PNEC or Expos	sure estimate/DNEL): PEC=P	redicted environme	ntal concentration.
4. Guidance to the Downstream				
chen PRO effec	nical resistant gloves (te C5, PROC8a, PROC9, tiveness). Personal pro	ested to EN 374) in combinati PROC10, PROC13, PROC1 otective equipment (PPE) tha	on with basic emplo 4: Yes (90% effectiv t has to be applied v	PROC9, PROC10, PROC13: Wear yee training. Local exhaust ventilation: /eness). PROC8b: Yes (95% vhen using a low hazard substance whic
Environment: Guid nece can b	ance is based on assur ssary to define appropr be achieved using onsit	iate site-specific risk manage	ch may not be applic ement measures. Re alone or in combinat	cable to all sites; thus, scaling may be quired removal efficiency for wastewater tion. If scaling reveals a condition of
putties, plasters, modelling c				thinners, paint removers, fillers,
1. Exposure scenario (6)	ay, metal and non-n	ietal sullace treatment pro		
Short title of the exposure scen	ario:			
•		ngs and paints, thinners, pair	nt removers, fillers, p	outties, plasters, modelling clay, metal an
non-metal surface treatment p	roducts, ink and toners			
List of use descriptors:				
Sector of use category (SU): S		45 0040		
Product category (PC): PC1, F				13, PROC14, PROC23, PROC24,
PROC25.	.000,11007,11000	a, 110000, 11003, 1100	10,110012,1100	, , , , , , , , , , , , , , , , , , , ,
Environmental release categor	y (ERC): ERC4 (SpER	C: ESVOC 5)		
List of names of contributing we				
PROC5 Mixing or blending in b	atch processes. Cover	s mixing or blending of solid	or liquid materials in	the context of manufacturing or
formulating sectors, as well as	•			
centrifugation, applicable for lic	uids and powders.			ssurized air, hydraulic pressure or
	o or mixture (charging a			sfer includes looding filling dumning
bagging and weighing.		and discharging) at non-dedic	ated facilities. Trans	sfer includes loading, filling, dumping,

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to

both capture vapour and aerosol emissions and minimise spillage.

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC12 Use of blowing agents in manufacture of foam.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

PROC23 Open processing and transfer operations at substantially elevated temperature. Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations.

PROC24 High (mechanical) energy work-up of substances bound in /on materials and/or articles. Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping.

PROC25 Other hot work operations with metals. Welding, soldering, gouging, brazing, flame cutting.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

#### 2. Conditions of use affecting exposure

2.1 Control of workers exposure	
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard
	substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that
	have to be applied when using a low hazard substance are as follows:
	- Minimisation of manual phases/work tasks
	- Work procedures minimising splashes and spills
	- Avoidance of contact with contaminated tools and objects
	- Regular cleaning of equipment and work area
	- Management/supervision in place to check that the RMMs in place are being used correctly
	and OCs are followed
	- Training for staff on good practice
	- Good standard of personal hygiene
Product characteristics:	Concentration of substance:
	- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: Up to
	100%.
	- PROC7: <=60%.
	- PROC23, PROC24, PROC25: >25%
	Physical state:
	- PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14:
	liquid
	- PROC23, PROC24, PROC25: solid-included into or onto a matrix
	Vapour pressure: <7 Pa at 20 °C
	Fugacity: Low.
Frequency and duration of use/exposure:	Duration:
	- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=8 hours/
	day.
	- PROC7, PROC23, PROC24, PROC25: >4 hours/day.
Human factors not influenced by risk	Exposed skin surface:
management:	- PROC12: 240 cm2 (one hand, face side only).
	- PROC5, PROC9, PROC13, PROC14: 480 cm2 (two hands, face side only).
	- PROC8a, PROC8b, PROC10: 960 cm2 (two hands).

Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C. Assessment tool used: - PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: CHESAR V2.2 Worker TRA v3. - PROC7, PROC23, PROC24, PROC25: ECETOC TRA v3 for inhalation and dermal exposure.
	Deviation from ECETOC TRA: PROC7: yes, a linear concentration reduction approach is used. The concentration of the substance in the product is taken into account following a linear concentration reduction approach instead of the default ECETOC TRA factors for modifying exposure due to percentage of substance in preparation.
Technical conditions and measures to control dispersion from source towards the worker:	<ul> <li>General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.</li> <li>Containment:</li> <li>PROC8b, PROC9, PROC12: Semi-closed process with occasional controlled exposure.</li> <li>PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC23, PROC24, PROC25: No.</li> <li>Local exhaust ventilation:</li> <li>PROC12, PROC23, PROC24, PROC25: Not required.</li> <li>PROC5, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness).</li> <li>PROC7, PROC8b: Yes (95% effectiveness).</li> <li>Occupational Health and Safety Management System: Advanced.</li> </ul>
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROC12, PROC14, PROC23, PROC24, PROC25: No (Effectiveness Dermal: 0%). - PROC7: Gloves APF 20 (minimum efficiency dermal: 95%) - PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
Amounts used:	Maximum daily use at a site: 1,2 ton/day. Maximum annual use at a site: 375 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use: Environmental factors not influenced by risk	Emission days: 300 days/year. Flow rate of receiving surface water: >=18,000 m3/day (default).
management:	
Other given operational conditions affecting environmental exposure:	Indoor use. Release fraction to air from process (initial release): 0.098; (final release): 0.098. Local release rate: 122.5 kg/day (SpERC ESVOC 5). Release fraction to wastewater from process (initial release): 0.02; (final release): 0.02. Local release rate: 25 kg/day (SpERC ESVOC 5). Release fraction to soil from process (final release): 0.0 (SpERC ESVOC 5).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Dry sludge application to agricultural soil: Yes (default).
releases to soil: Conditions and measures related to municipal	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%).
sewage treatment plant:	Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

Conditions and measures rela treatment of waste for disposa	li: as	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)				
Conditions and measures rela recovery of waste:		xternal recovery an	nd recycling o	of waste should comp	ly with applicable local and/or national	
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:		All risk management measures utilised must also comply with all relevant local regulations.				
3. Exposure estimation and re	erence to its source					
Health						
Information for contributing sce			7. ECETOC	TRA Worker v3. Only	highest figures are presented here.	
Exposure estimation:			I. LOLIOO		highest lightes are presented here.	
	Route	Exposure est	imate	RCR	<u>Notes</u>	
Worker, long-term, systemic	Dermal	3,43 mg/kg bv	v/day	0,429	PROC14	
Worker, long-term, systemic	Inhalation	13,5 mg/m3	,	0,614	PROC7	
Worker, long-term, systemic	Combined route	es N/A		0,774	PROC7	
Worker, acute, systemic	Dermal	3,43 mg/kg bv	v/day	0,086	PROC14	
Worker, acute, systemic	Inhalation	54,06 mg/m3	-	0,492	PROC7	
Worker, acute, systemic	Combined route	es N/A		0,524	PROC7	
Environment						
Information for contributing sce	enario (2): ERC4 (SpEF	RC: ESVOC 5)				
Assessment method: EUSES	2.1.2.					
Exposure estimation:						
Compartment	PEC	E	<u>RCR</u>	<u>Notes</u>		
Freshwater	0,162 mg/L	(	),162			
Freshwater sediment	0,836 mg/kg dw	. (	),159			
Marine water	0,016 mg/L	(	),162			
Marine water sediment	0,084 mg/kg dw	· (	),159			
Soil	0,063 mg/kg dw	· (	),139			
STP	1,579 mg/L		),041			
Man via environment	0,028 mg/m3 / 0 bw/day	),034 mg/kg <	<0,01 / <0,01	Inhalation / Oral		
Man via environment-Combin routes	ed N/A	(	),014			
RCR=Risk characterization rat	o (PEC/PNEC or Expo	sure estimate/DN	EL): PEC=Pr	edicted environmenta	l concentration.	
4. Guidance to the Downstrea						
Health: Pred Con	licted exposures are no ditions outlined in Secti	ot expected to exc ion 2 are impleme	eed the DN(N nted. Where	I)EL when the Risk Mother Risk Manageme	lanagement Measures/Operational ent Measures/Operational Conditions alent levels. Indoor use, no respirator	
requ houn PRC Glov PRC PRC haza PRC >25 PRC	ired. Duration of activi s/day; PROC7, PROC 0C13: Wear chemical re- res APF 20 (minimum e 0C25: Not required. PR 0C8b: Yes (95% effecti- ard substance which ca 0C8a, PROC8b, PROC %. PROC7: <=60%. PI 0C13, PROC14); solid	ty:: PROC5, PRO 23, PROC24, PRO esistant gloves (te efficiency dermal: 9 20C5, PROC8a, P veness). Persona auses serious eye 29, PROC10, PRO hysical state: liquid (PROC23, PROC2	C8a, PROC8 DC25: >4 hou sted to EN 3 95%). Local ROC9, PRO I protective e irritation: Che C12, PROC1 d (PROC5, P 24, PROC25-	b, PROC9, PROC10, rrs/day. PROC5, PRC 74) in combination wit exhaust ventilation: F C10, PROC13, PROC quipment (PPE) that I emical goggles. Conc 3, PROC14: Up to 10 ROC7, PROC8a, PRO included into or onto a	PROC12, PROC13, PROC14: <=8 PC8a, PROC8b, PROC9, PROC10, h basic employee training. PROC7: PROC12, PROC23, PROC24, C14: Yes (90% effectiveness). PROC7; has to be applied when using a low entration of substance: PROC5, 10%. PROC23, PROC24, PROC25; DC8b, PROC9, PROC10, PROC12, a matrix).	
nece can	PROC13, PROC14); solid (PROC23, PROC24, PROC25-included into or onto a matrix). Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewate can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.					

Exposure scenario (7): Use at industrial sites - Lubricants, greases & release products

1. Exposure scenario (7)	
Short title of the exposure scenario:	
Use at industrial sites - Lubricants, greases & re	lease products
List of use descriptors:	
Sector of use category (SU): SU0	
Product category (PC): PC24	
Process category (PROC): PROC18 Environmental release category (ERC): ERC7	
	nd corresponding PBOCo:
List of names of contributing worker scenarios a PROC18 General greasing /lubrication at high ki including manual application.	netic energy conditions. Use of lubricant or greasing agents in high kinetic energy conditions,
Name of contributing environmental scenario an ERC7 Use of functional fluid at industrial site.	d corresponding ERCs:
Chapter R.12: Use descriptor system (http://guidance.echa.e	the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, europa.eu/docs/guidance_document/information_requirements_r12_en.pdf).
2. Conditions of use affecting exposure	
2.1 Control of workers exposure	
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows: - Minimisation of manual phases/work tasks
	- Work procedures minimising splashes and spills
	- Avoidance of contact with contaminated tools and objects
	- Regular cleaning of equipment and work area
	- Management/supervision in place to check that the RMMs in place are being used correctly
	and OCs are followed
	- Training for staff on good practice
	- Good standard of personal hygiene
Product characteristics:	Concentration of substance: Up to 100%.
	Physical state: liquid.
Frequency and duration of use/exposure:	Duration: <=8 hours/day.
Human factors not influenced by risk	Exposed skin surface: 960 cm2 (two hands).
management:	
Other given operational conditions affecting	Location: Indoor use.
workers exposure:	Domain: Industrial use.
	Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.
dispersion from source towards the worker:	Containment: No.
	Local exhaust ventilation: Yes (90% effectiveness).
	Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal	Respiratory protection: Not required.
protection, hygiene and health evaluation:	Chemical safety goggles.
	Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic
	employee training) (Effectiveness Dermal: 90%).
Additional good practice advice. Obligations	Generally accepted standards of occupational hygiene are maintained.
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks. Minimisation of splashes and spills.
apply:	Avoidance of contact with contaminated tools and objects.
	Regular cleaning of equipment and work area
	Regular cleaning of equipment and work area. Training staff on good practice
	Training staff on good practice.
2.2 Control of environmental exposure	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and
•	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure Product characteristics:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid.
Product characteristics:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
2.2 Control of environmental exposure Product characteristics: Amounts used:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Maximum daily use at a site: 1 ton/day.
Product characteristics:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Maximum daily use at a site: 1 ton/day. Maximum annual use at a site: 20 tons/year.
Product characteristics:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Maximum daily use at a site: 1 ton/day.
Product characteristics:	Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Maximum daily use at a site: 1 ton/day.

Environmental factors not influence management:			ing surface walt	er: >=18,000 m3/day		
Other given operational conditions environmental exposure:	Rel rate Rel Loc	Indoor use. Release fraction to air from process (initial release): 0.05; (final release): 0.05. Local release rate: 50 kg/day. Release fraction to wastewater from process (initial release): 0.05; (final release): 0.05. Local release rate: 50 kg/day. Release fraction to soil from process (final release): 0.05.				
Technical onsite conditions and m reduce or limit discharges, air emi	easures to Dry			al soil: Yes (default		
releases to soil:	<sup>1</sup> .1		<u> </u>		07.00%	
Conditions and measures related sewage treatment plant:				t (STP): Yes ( Effici reatment plant: >=2	ency=87.36%). 2000 m3/day (standard town).	
Conditions and measures related treatment of waste for disposal:	to external Par ass	ticular consider essment demo	ations on the wantstrating control	aste treatment oper of risk with default	ations: No (low risk) (ERC based conditions. Low risk assumed for /local legislation is sufficient.)	
Conditions and measures related			and recycling of	waste should comp	ly with applicable local and/or nationa	
recovery of waste: Additional good practice advice. C according to Article 37(4) of REAC apply:	bligations All	ulations. risk manageme	nt measures util	ised must also com	ply with all relevant local regulations.	
<ol><li>Exposure estimation and reference</li></ol>	nce to its source					
Health						
Information for contributing scenario						
Assessment method: CHESAR V2.	2 Worker TRA v3.					
Exposure estimation:	<b>.</b> .	_		505		
Maden land tama avatancia	<u>Route</u>	Exposure es		<u>RCR</u>	<u>Notes</u>	
Worker, long-term, systemic	Dermal	1,371 mg/kg	-	0,171		
Worker, long-term, systemic	Inhalation	9,011 mg/m3	<b>j</b>	0,41		
Worker, long-term, systemic	Combined routes	N/A	h	0,581		
Worker, acute, systemic	Dermal	1,371 mg/kg	-	0,034		
Worker, acute, systemic	Inhalation	36,05 mg/m3	5	0,328		
Worker, acute, systemic	Combined routes	N/A		0,362		
Environment						
Information for contributing scenarion Assessment method: EUSES 2.1.2 Exposure estimation:						
Compartment	PEC		RCR	Notes		
Freshwater	0,32 mg/L		0,32			
Freshwater sediment	1,652 mg/kg dw		0,314			
Marine water	0,032 mg/L		0,32			
Marine water sediment	0,165 mg/kg dw		0,314			
Soil	0,11 mg/kg dw		0,242			
STP	3,159 mg/L		0,081			
Man via environment	0,000846 mg/m3 / kg bw/day		<0,01 / <0,01	Inhalation / Oral		
Man via environment-Combined routes	kg bw/day N/A		<0,01			

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

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator required. Duration of activity: <=8 hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: Up to 100%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Exposure scenario (8): Use at industrial sites - Paper/board dye, finishing/impregnation

#### 1. Exposure scenario (8)

Short title of the exposure scenario:

Use at industrial sites - Paper/board dye, finishing/impregnation

#### List of use descriptors:

Sector of use category (SU): SU0, SU6b.

Product category (PC): PC26

Process category (PROC): PROC5, PROC6, PROC7, PROC8b, PROC10, PROC13, PROC14.

Environmental release category (ERC): ERC4

#### List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

PROC7 Industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

#### 2. Conditions of use affecting exposure

zard
s/OCs that
ed correctly

Other given operational conditions affecting workers exposure: Technical conditions and measures to control dispersion from source towards the worker:	Location: Indoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C. Assessment tool used: - PROC5, PROC8b, PROC10, PROC13, PROC14: CHESAR V2.2 Worker TRA v3. - PROC7: ECETOC TRA v3 for inhalation and dermal exposure. Deviation from ECETOC TRA: yes, a linear concentration reduction approach is used. The concentration of the substance in the product is taken into account following a linear concentration reduction approach instead of the default ECETOC TRA factors for modifying exposure due to percentage of substance in preparation. General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment:
	<ul> <li>PROC8b: Semi-closed process with occasional controlled exposure.</li> <li>PROC5, PROC6, PROC7, PROC10, PROC13, PROC14: No.</li> <li>Local exhaust ventilation:</li> <li>PROC5, PROC6, PROC10, PROC13, PROC14: Yes (90% effectiveness).</li> <li>PROC7, PROC8b: Yes (95% effectiveness).</li> <li>Occupational Health and Safety Management System: Advanced.</li> </ul>
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROC14: No (Effectiveness Dermal: 0%). - PROC7: Gloves APF 20 (minimum efficiency dermal: 95%) - PROC5, PROC6, PROC8b, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly an OCs followed.
.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
Amounts used:	Maximum daily use at a site: 1,2 ton/day. Maximum annual use at a site: 50 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 40 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Indoor use. Industrial use. Release fraction to air from process (initial release): 1.0; (final release): 1.0. Local release rate: 1250 kg/day. Release fraction to wastewater from process (initial release): 1.0; (final release): 0.0. Local release rate: 0 kg/day. Release fraction to soil from process (final release): 0.05.
Technical conditions and measures at process level (source) to prevent release:	Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all used chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

Conditions and measures recovery of waste:		regu	ulations.			omply with applicable local and/or national		
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:			All risk management measures utilised must also comply with all relevant local regulations.					
3. Exposure estimation and	reference t	to its source						
Health								
Information for contributing s	cenario (1)	: PROC7, PROC	C14					
Assessment method: PROC	14: CHESA	R v2.2 Worker	TRA v3. PRC	C7: ECETOC TR	RA Worker v3. O	nly highest figures are presented here.		
Exposure estimation:								
	Ro	<u>oute</u>	Exposure e	<u>stimate</u>	<u>RCR</u>	<u>Notes</u>		
Worker, long-term, systemi	c De	ermal	3,43 mg/kg	bw/day	0,429	PROC14		
Worker, long-term, systemi	c Inl	halation	13,5 mg/m3		0,614	PROC7		
Worker, long-term, systemi	c Co	ombined routes	N/A		0,774	PROC7		
Worker, acute, systemic	De	ermal	3,43 mg/kg	bw/day	0,086	PROC14		
Worker, acute, systemic	Ini	halation	54,06 mg/m	3	0,492	PROC7		
Worker, acute, systemic	Co	ombined routes	N/A		0,524	PROC7		
Environment								
Information for contributing s	cenario (2)	: ERC4						
Assessment method: EUSE	S 2.1.2.							
Exposure estimation:								
<u>Compartment</u>	<u>PE</u>	<u>=C</u>		<u>RCR</u>	<u>Notes</u>			
Freshwater	0,0	00372 mg/L		<0,01				
Freshwater sediment	0,0	019 mg/kg dw		<0,01				
Marine water	0,0	000371 mg/L		<0,01				
Marine water sediment	0,0	00192 mg/kg dw		<0,01				
Soil	0,0	014 mg/kg dw		0,03				
STP	0 1	mg/L		<0,01				
Man via environment		038 mg/m3 / 0,04 v/day	41 mg/kg	<0,01 / <0,01	Inhalation / O	ral		
Man via environment-Comb routes	bined N/	A		0,017				
RCR=Risk characterization	ratio (PEC/I	PNEC or Exposu	ure estimate/D	NEL); PEC=Pre	dicted environme	ental concentration.		
4. Guidance to the Downstre								
C ar re ho 37 ex (9 w	onditions of e adopted, quired. Du ours/day. Pl 74) in comb khaust vent 5% effectiv hich causes	utlined in Sectior then users shou ration of activity: ROC5, PROC8a ination with basi ilation: PROC5, eness). Person s serious eye irri	a 2 are implen ild ensure that :: PROC5, PR a, PROC8b, P c employee tr PROC6, PRC al protective e tation: Chemid	nented. Where of risks are manag OC6, PROC8b, I ROC9, PROC10 aining. PROC7: 0 C10, PROC13, F equipment (PPE) cal goggles. Cor	her Risk Manage jed to at least eq PROC10, PROC , PROC13: Wea Gloves APF 20 ( PROC14: Yes (9 that has to be ap incentration of sub	sk Management Measures/Operational ement Measures/Operational Conditions juivalent levels. Indoor use, no respirator C13, PROC14: <=8 hours/day; PROC7 >4 r chemical resistant gloves (tested to EN minimum efficiency dermal: 95%). Local 0% effectiveness). PROC7, PROC8b: Yes oplied when using a low hazard substance ostance: PROC5, PROC6, PROC8b,		
Environment: G ne ca	uidance is l ecessary to an be achie	based on assum define appropria ved using onsite	ed operating ate site-specif /offsite techno	ic risk manageme blogies, either alo	may not be appl ent measures. R ne or in combina	icable to all sites; thus, scaling may be equired removal efficiency for wastewater ation. If scaling reveals a condition of ety assessment is required.		
Exposure scenario (9): Us	e at indus	trial sites - Pho	oto-chemica	s				
1. Exposure scenario (9)								
Short title of the exposure se Use at industrial sites - Pho		ls						
List of use descriptors:								
Sector of use category (SU)	): SU0							

Sector of use category (SU): SU0 Product category (PC): PC30

Process category (PROC): PROC8a, PROC8b, PROC13. Environmental release category (ERC): ERC4

### List of names of contributing worker scenarios and corresponding PROCs:

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC13 Treatment of articles by dipping and pouring.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

#### 2. Conditions of use affecting exposure

2.1 Control of workers exposure					
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard				
	substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that				
	have to be applied when using a low hazard substance are as follows:				
	- Minimisation of manual phases/work tasks				
	<ul> <li>Work procedures minimising splashes and spills</li> </ul>				
	<ul> <li>Avoidance of contact with contaminated tools and objects</li> </ul>				
	- Regular cleaning of equipment and work area				
	- Management/supervision in place to check that the RMMs in place are being used correctly				
	and OCs are followed				
	- Training for staff on good practice				
	- Good standard of personal hygiene				
Product characteristics:	Concentration of substance: Up to 100%.				
	Physical state: liquid.				
Frequency and duration of use/exposure:	Duration: <=8 hours/day.				
Human factors not influenced by risk	Exposed skin surface:				
management:	- PROC13: 480 cm2 (two hands, face side only).				
	- PROC8a, PROC8b: 960 cm2 (two hands).				
Other given operational conditions affecting	Location: Indoor use.				
workers exposure:	Domain: Industrial use.				
	Process temperature (for liquid): <= 40 °C.				
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.				
dispersion from source towards the worker:	Containment:				
	- PROC8b: Semi-closed process with occasional controlled exposure.				
	- PROC8a, PROC13: No.				
	Local exhaust ventilation:				
	- PROC8a, PROC13: Yes (90% effectiveness).				
	- PROC8b: Yes (95% effectiveness).				
	Occupational Health and Safety Management System: Advanced.				
Conditions and massures related to personal	Respiratory protection: Not required.				
Conditions and measures related to personal					
protection, hygiene and health evaluation:	Chemical safety goggles.				
	Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic				
	employee training) (Effectiveness Dermal: 90%).				
Additional good practice advice. Obligations	Generally accepted standards of occupational hygiene are maintained.				
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks.				
apply:	Minimisation of splashes and spills.				
	Avoidance of contact with contaminated tools and objects.				
	Regular cleaning of equipment and work area.				
	Training staff on good practice.				
	Management/supervision in place to check that RMMs in place are being used correctly and				
	OCs followed.				
2.2 Control of environmental exposure	Dhusian state liquid				
Product characteristics:	Physical state: liquid.				
• · ·	Vapour pressure: 7 Pa at 20 °C				
Amounts used:	Maximum daily use at a site: 0.067 ton/day.				
	Maximum annual use at a site: 20 tons/year.				
	Percentage of tonnage used at regional scale: 10 %.				
Frequency and duration of use:	Emission days: 300 days/year.				

Environmental factors not influence management:	ed by risk Flow	w rate of receiving s	urtace water: >=18	000 m3/day (	detault).	
Other given operational conditions environmental exposure:	Indu Rel rate Rel Loc	Indoor use. Industrial use. Release fraction to air from process (initial release): 1.0; (final release): 1.0. Local release rate: 67 kg/day. Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 67 kg/day. Release fraction to soil from process (final release): 0.05.				
Technical onsite conditions and m		sludge application		,	-	
reduce or limit discharges, air emi releases to soil:	ssions and		-			
Conditions and measures related sewage treatment plant:	Size	· · · · · · · · · · · · · · · · · · ·	ge system/treatme	nt plant: >=20	00 m3/day (standard town).	
Conditions and measures related					ions: No (low risk) (ERC based	
treatment of waste for disposal:			-		onditions. Low risk assumed for ocal legislation is sufficient.)	
Conditions and measures related				· · · · · · · · · · · · · · · · · · ·	with applicable local and/or national	
recovery of waste:		ulations.	coyoning of waste s			
Additional good practice advice. C according to Article 37(4) of REAC apply:	-	isk management m	easures utilised mu	ist also compl	y with all relevant local regulations.	
3. Exposure estimation and refere	nce to its source					
Health						
Information for contributing scenari	o (1): PROC8a, PRO	DC8b, PROC13				
Assessment method: CHESAR V2	.2 Worker TRA v3. C	Only highest figures	are presented here			
Exposure estimation:						
	<u>Route</u>	Exposure estima	te <u>RC</u>	<u>2R</u>	<u>Notes</u>	
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/c	ay 0,1	71	PROC8a, PROC8b, PROC13	
Worker, long-term, systemic	Inhalation	4,506 mg/m3	0,2	205	PROC8a, PROC13	
Worker, long-term, systemic	Combined routes	N/A	0,3	376	PROC8a, PROC13	
Worker, acute, systemic	Dermal	1,371 mg/kg bw/c	ay 0,0	)34	PROC8a, PROC8b, PROC13	
Worker, acute, systemic	Inhalation	18,02 mg/m3	0,1	64	PROC8a, PROC13	
Worker, acute, systemic	Combined routes	N/A	0,2	98	PROC8a, PROC13	
Environment						
Information for contributing scenari	o (2): ERC4					
Assessment method: EUSES 2.1.2	2.					
Exposure estimation:						
Compartment	PEC	RCF		<u>s</u>		
Freshwater	0,427 mg/L	0,42				
Freshwater sediment	2,208 mg/kg dw	0,41				
Marine water	0,043 mg/L	0,42				
Marine water sediment	0,221 mg/kg dw	0,41				
Soil	0,148 mg/kg dw	0.32				
STP	4,233 mg/L	0,10				
Man via environment	0,015 mg/m3 / 0,0 bw/day	27 mg/kg <0,0	1 / <0,01 Inhal	ation / Oral		
Man via environment-Combined routes	N/A	<0,0	1			

Health:	Conditions outlined in are adopted, then use required. Duration of basic employee trainin effectiveness). Person	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator required. Duration of activity: <=8 hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC8a, PROC13: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: Up to 100%.				
Environment:	necessary to define ap can be achieved using	assumed operating conditions which may not be applicable to all sites; thus, scaling may be oppopriate site-specific risk management measures. Required removal efficiency for wastewater g onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of s > 1), additional RMMs or a site-specific chemical safety assessment is required.				
Exposure scenario (	(10): Use at industrial site	es - Use in polymer preparations				
1. Exposure scenario	o (10)					
Short title of the expo	osure scenario:					
Use at industrial site	es - Use in polymer preparat	ions				
List of use descriptor	'S:					
Sector of use catego	ory (SU): SU0, SU11, SU12					
Product category (P						
Process category (P						
Environmental release	se category (ERC): ERC4					
List of names of cont	ributing worker scenarios a	and corresponding PROCs:				
PROC13 Treatment	of articles by dipping and p	ouring.				
Name of contributing	environmental scenario an	id corresponding ERCs:				
		ustrial site (no inclusion into or onto article).				
		the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment,				
		europa.eu/docs/guidance_document/information_requirements_r12_en.pdf).				
2. Conditions of use						
2.1 Control of worker	s exposure					
General:		Personal protective equipment (PPE) that has to be applied when using a low hazard				
		substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that				
		have to be applied when using a low hazard substance are as follows:				
		- Minimisation of manual phases/work tasks				
		- Work procedures minimising splashes and spills				
		- Avoidance of contact with contaminated tools and objects				
		- Regular cleaning of equipment and work area				
		- Management/supervision in place to check that the RMMs in place are being used correctly				
		and OCs are followed				
		- Training for staff on good practice				
	-	- Good standard of personal hygiene				
Product characterist	ICS:	Concentration of substance: Up to 100%.				
		Physical state: liquid.				
	tion of use/exposure:	Duration: <=8 hours/day.				
Human factors not in	nfluenced by risk	Exposed skin surface: 480 cm2 (two hands, face side only).				
management:						
	nal conditions affecting	Location: Indoor use.				
workers exposure:		Domain: Industrial use.				
		Process temperature (for liquid): <= 40 °C.				
	and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.				
dispersion from sour	ce towards the worker:	Containment: No.				
		Local exhaust ventilation: Yes (90% effectiveness).				
		Occupational Health and Safety Management System: Advanced.				
	sures related to personal	Respiratory protection: Not required.				
protection, hygiene a	and health evaluation:	Chemical safety goggles.				
		Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic				

Additional good practice advice. C according to Article 37(4) of REA apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.						
2.2 Control of environmental expo	sure						
Product characteristics:		•	state: liquid.				
			ressure: 7 Pa at 20 °C				
Amounts used:			a daily use at a site: 1 annual use at a site:	•			
			ge of tonnage used at	•			
Frequency and duration of use:		Emission	days: 20 days/year.	-			
Environmental factors not influence management:	ced by risk	Flow rate	of receiving surface v	water: >=18000 m3/d	ay (default).		
Other given operational conditions environmental exposure:	s affecting	Indoor use. Release fraction to air from process (initial release): 1.00; (final release): 1.00. Local release rate: 1000 kg/day. Release fraction to wastewater from process (initial release): 1,0; (final release): 0,0. Local release rate: 0 kg/day. Release fraction to soil from process (final release): 0.05.					
Technical conditions and measure level (source) to prevent release:	-	<b>process</b> Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.					
Technical onsite conditions and m reduce or limit discharges, air em releases to soil:		Dry sludg	e application to agricu	ultural soil: Yes (defa	ult).		
Conditions and measures related sewage treatment plant:	to municipal	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).					
Conditions and measures related treatment of waste for disposal:	to external	assessme	ent demonstrating cor	ntrol of risk with defau	erations: No (low risk) ( It conditions. Low risk a al/local legislation is su	assumed for	
Conditions and measures related recovery of waste:	to external	External r regulation		g of waste should cor	nply with applicable loc	al and/or national	
Additional good practice advice. C according to Article 37(4) of REAC apply:	-	All risk m	anagement measures	utilised must also co	mply with all relevant lo	ocal regulations.	
3. Exposure estimation and refere	nce to its sourc	e					
Health		-					
Information for contributing scenar	io (1): PROC13						
Assessment method: CHESAR V2	.2 Worker TRA	v3.					
Exposure estimation:							
	Route	-	osure estimate	RCR	<u>Notes</u>		
Worker, long-term, systemic	Dermal		71 mg/kg bw/day	0,171			
Worker, long-term, systemic	Inhalation		)6 mg/m3	0,205			
Worker, long-term, systemic	Combined ro			0,376			
Worker, acute, systemic	Dermal		71 mg/kg bw/day	0,034			
Worker, acute, systemic	Inhalation		)2 mg/m3	0,164			
Worker, acute, systemic	Combined ro	utes N/A		0,198			
Environment Information for contributing scenari							
Assessment method: EUSES 2.1.2							
, 100000 mont mothou. LUOLO 2.1.2							
Exposure estimation:							
Exposure estimation: Compartment	PEC		RCR	Notes			

<u>Compartment</u>	PEC	<u>RCR</u>	Notes
Freshwater sediment	0,019 mg/kg dw	<0,01	
Marine water	0,000371 mg/L	<0,01	
Marine water sediment	0,00192 mg/kg dw	<0,01	
Soil	0,01 mg/kg dw	0.022	
STP	0 mg/L	<0,01	
Man via environment	0,015 mg/m3 / 0,017 mg/kg bw/day	<0,,01 / <0,01	Inhalation / Oral
Man via environment-Combi routes	ned N/A	<0,01	
RCR=Risk characterization ra	atio (PEC/PNEC or Exposure estima	te/DNEL); PEC=Pre	dicted environmental concentration.
4. Guidance to the Downstre	am User to evaluate whether he wo	orks inside the bound	daries set by the ES
are rec ba tha	e adopted, then users should ensure quired. Duration of activity: <=8 hour sic employee training. Local exhaus	that risks are manag s/day. Wear chemica t ventilation: Yes (90 v hazard substance v	her Risk Management Measures/Operational Conditions ged to at least equivalent levels. Indoor use, no respirator al resistant gloves (tested to EN 374) in combination with % effectiveness). Personal protective equipment (PPE) which causes serious eye irritation: Chemical goggles.
ne ca	cessary to define appropriate site-sp n be achieved using onsite/offsite teo	ecific risk manageme chnologies, either alo	may not be applicable to all sites; thus, scaling may be ent measures. Required removal efficiency for wastewate one or in combination. If scaling reveals a condition of cific chemical safety assessment is required.
Exposure scenario (11): Us	e at industrial sites - Textile dye	s, finishing/impreg	gnation products
1. Exposure scenario (11)			
Short title of the exposure sc			
	le dyes, finishing/impregnation produ	ucts	
List of use descriptors:			
Sector of use category (SU): Product category (PC): PC3			
	≁ PROC5, PROC6, PROC7, PROC8a,	PROC8b PROC9	PROC10 PROC13 PROC14
<b>2 1</b> ( <i>)</i>	jory (ERC): ERC4 (SpERC: TEGEW		
	worker scenarios and correspondin		
PROC5 Mixing or blending in	n batch processes. Covers mixing or	blending of solid or	liquid materials in the context of manufacturing or
formulating sectors, as well a	as upon end use.		
			e e.g. calendering of textile, rubber or paper.
		sion into air (= atomiz	ration) by e.g. pressurized air, hydraulic pressure or
centrifugation, applicable for		aina) at new dedit	od facilities. Transfer includes leading filling, duration
	nce or mixture (charging and dischar	ging) at non-dedicate	ed facilities. Transfer includes loading, filling, dumping,
PROC9 Transfer of substant	ce or mixture into small containers (c	ledicated filling line, i	cilities. Transfer includes loading, filling, dumping, baggin including weighing). Filling lines specifically designed to
both capture vapour and aer	osol emissions and minimise spillage	e.	

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

## 2.1 Control of workers exposure

General:	Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows: - Minimisation of manual phases/work tasks - Work procedures minimising splashes and spills - Avoidance of contact with contaminated tools and objects - Regular cleaning of equipment and work area - Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed - Training for staff on good practice - Good standard of personal hygiene
Product characteristics:	Concentration of substance: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: Up to 100%. - PROC7: <=60%. Physical state: liquid. Vapour pressure: <7 Pa at 20 °C
Frequency and duration of use/exposure:	Duration: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <=8 hours/ day. - PROC7: >4 hours/day.
Human factors not influenced by risk management:	Exposed skin surface: - PROC5, PROC9, PROC13, PROC14: 480 cm2 (two hands, face side only). - PROC6, PROC8a, PROC8b, PROC10: 960 cm2 (two hands).
Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C. Assessment tool used: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: CHESAR V2.2 Worker TRA v3. - PROC7: ECETOC TRA v3 for inhalation and dermal exposure. Deviation from ECETOC TRA: yes, a linear concentration reduction approach is used. The concentration of the substance in the product is taken into account following a linear concentration reduction approach instead of the default ECETOC TRA factors for modifying exposure due to percentage of substance in preparation.
Technical conditions and measures to control dispersion from source towards the worker:	<ul> <li>General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.</li> <li>Containment:</li> <li>PROC8b, PROC9: Semi-closed process with occasional controlled exposure.</li> <li>PROC5, PROC6, PROC7, PROC8a, PROC10, PROC13, PROC14: No.</li> <li>Local exhaust ventilation:</li> <li>PROC5, PROC6, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness).</li> <li>PROC7, PROC8b: Yes (95% effectiveness).</li> <li>Occupational Health and Safety Management System: Advanced.</li> </ul>
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROC14: No (Effectiveness Dermal: 0%). - PROC7: Gloves APF 20 (minimum efficiency dermal: 95%) - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practive advice. Obligations according to Article 37(4) of REACH do not apply: 2.2 Control of environmental exposure	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.

2.2 Control of environmental exposure

		Physical state: liquid. /apour pressure: 7 Pa at 20 °	C			
Amounts used:		Maximum daily use at a site: (				
		Maximum annual use at a site: 10 tons/year.				
		Percentage of tonnage used a	-			
Frequency and duration of use:	E	Emission days: 220 days/yea	r.			
Environmental factors not influe	nced by risk F	low rate of receiving surface	water: >=18000 m3/da	ay (default).		
management:						
Other given operational condition	-	ndoor use.	<i></i>			
environmental exposure:	r	ate: 0 kg/day (SpERC TEGE	WA 6).	0.0; (final release): 0.0. Local rele		
				elease): 1.00; (final release): 1.00	).	
		Local release rate: 45 kg/day Release fraction to soil from p				
Technical onsite conditions and		Dry sludge application to agric				
reduce or limit discharges, air e		bry bludge application to agri				
releases to soil:						
Conditions and measures relate	d to municipal	Municipal Sewage Treatment	Plant (STP): Yes ( Effi	ciency=87.36%).		
sewage treatment plant:				=2000 m3/day (standard town).		
Conditions and measures relate				erations: No (low risk) (ERC based		
treatment of waste for disposal:		•		t conditions. Low risk assumed for	r	
Conditions and measures relate			-	al/local legislation is sufficient.)	-	
Conditions and measures relate recovery of waste:		egulations.	ng of waste should con	nply with applicable local and/or na	ationa	
Additional good practive advice.		÷	s utilised must also co	mply with all relevant local regulat	ions	
according to Article 37(4) of RE	•	an nok management measure			10113.	
apply:						
apply: 3. Exposure estimation and refe	rence to its source					
apply: 3. Exposure estimation and refe Health	rence to its source					
3. Exposure estimation and refe Health		ROC14				
3. Exposure estimation and refe Health Information for contributing scena	ario (1): PROC7, PF		DC TRA Worker v3. On	y highest figures are presented h	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF		C TRA Worker v3. On	y highest figures are presented h	ere.	
3. Exposure estimation and references Health Information for contributing scenar Assessment method: PROC14: 0	ario (1): PROC7, PF		IC TRA Worker v3. On <u>RCR</u>	y highest figures are presented h <u>Notes</u>	ere.	
3. Exposure estimation and references Health Information for contributing scenar Assessment method: PROC14: ( Exposure estimation:	ario (1): PROC7, PF CHESAR v2.2 Work	er TRA v3. PROC7: ECETC	RCR		ere.	
3. Exposure estimation and references of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal	er TRA v3. PROC7: ECETC <u>Exposure estimate</u> 3,43 mg/kg bw/day	<u>RCR</u> 0,429	Notes PROC14	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal Inhalation	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3	<u>RCR</u> 0,429 0,614	Notes PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route	er TRA v3. PROC7: ECETC <u>Exposure estimate</u> 3,43 mg/kg bw/day 13,5 mg/m3 es N/A	RCR 0,429 0,614 0,774	Notes PROC14 PROC7 PROC7	ere.	
3. Exposure estimation and refer- Health Information for contributing scena Assessment method: PROC14: ( Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day	RCR 0,429 0,614 0,774 0,086	Notes PROC14 PROC7 PROC7 PROC7 PROC14	ere.	
3. Exposure estimation and refer- Health Information for contributing scena Assessment method: PROC14: ( Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3	RCR 0,429 0,614 0,774 0,086	Notes PROC14 PROC7 PROC7 PROC7 PROC14	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal Inhalation Combined route Dermal Inhalation Combined route	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2.	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A RC TEGEWA 6).	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
B. Exposure estimation and reference of the set of	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2.	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A RC TEGEWA 6).	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
B. Exposure estimation and reference of the set of	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6).	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC7 PROC14 PROC7	ere.	
B. Exposure estimation and reference of the set of	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L	er TRA v3. PROC7: ECETC Exposure estimate 3,43 mg/kg bw/day 13,5 mg/m3 es N/A 3.43 mg/kg bw/day 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6).	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes       PROC14       PROC7       PROC7       PROC14       PROC7       PROC7       PROC7	ere.	
B. Exposure estimation and reference of the set of	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dv	ter TRA v3. PROC7: ECETC         Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,288         0,288	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes       PROC14       PROC7       PROC7       PROC14       PROC7       PROC7       PROC7	ere.	
B. Exposure estimation and reference of the set of	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dw 0,029 mg/L 0,149 mg/kg dw	ter TRA v3. PROC7: ECETC         Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,288         0,288	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes       PROC14       PROC7       PROC7       PROC14       PROC7       PROC7       PROC7	ere.	
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dw 0,029 mg/L 0,149 mg/kg dw 0,1 mg/kg dw	Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,283         0,283         v       0,283         0,219	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes       PROC14       PROC7       PROC7       PROC14       PROC7       PROC7       PROC7	ere.	
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Context) Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.7 Exposure estimation: Compartment Freshwater Freshwater Freshwater Freshwater Marine water sediment Soil STP	ario (1): PROC7, PF CHESAR v2.2 Work Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dw 0,029 mg/L 0,149 mg/kg dw 0,1 mg/kg dw 2,843 mg/L	Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,283         0,219         0,073	RCR         0,429         0,614         0,774         0,086         0,492         0,524	Notes         PROC14         PROC7         PROC14         PROC7         PROC7         PROC7         PROC7         PROC7         PROC7	ere.	
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported Scenario Scenario) Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenario Assessment method: EUSES 2. Exposure estimation: Compartment Freshwater Freshwater sediment Marine water Soil	ario (1): PROC7, PF CHESAR v2.2 Work Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dw 0,029 mg/L 0,149 mg/kg dw 0,1 mg/kg dw 2,843 mg/L 0,0000855 mg/d	Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,283         0,219         0,073	RCR         0,429         0,614         0,774         0,086         0,492         0,524	Notes         PROC14         PROC7         PROC14         PROC7         PROC7         PROC7         PROC7         PROC7         PROC7	ere.	
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Context) Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.7 Exposure estimation: Compartment Freshwater Freshwater Freshwater Freshwater Marine water sediment Soil STP	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE 1.2. PEC 0,288 mg/L 1,489 mg/kg dw 0,029 mg/L 0,149 mg/kg dw 2,843 mg/L 0,0000855 mg/m mg/kg bw/day	Exposure estimate         3,43 mg/kg bw/day         13,5 mg/m3         es       N/A         3.43 mg/kg bw/day         54,06 mg/m3         es       N/A         RC TEGEWA 6).         RCR         0,288         v       0,283         0,219         0,073	RCR         0,429         0,614         0,774         0,086         0,492         0,524	Notes         PROC14         PROC7         PROC14         PROC7         PROC7         PROC7         PROC7         PROC7         PROC7	ere.	

4. Guidance to the De	wnstream User to evaluate whether he works inside the boundaries set by the ES
Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirator required. Duration of activity: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <=8 hours/day; PROC7 >4 hours/day. PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13; Wear chemica resistant gloves (tested to EN 374) in combination with basic employee training. PROC7: Gloves APF 20 (minimum efficiency dermal: 95%). Local exhaust ventilation: PROC5, PROC6, PROC8a, PROC8a, PROC9, PROC10, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC7, PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: PROC5, PROC6, PROC8a, PROC9, PROC10, PROC10, PROC13, PROC14, Up to 100%. PROC7: <=60%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Exposure scenario (	12): Use at industrial sites - Washing & cleaning products - Cosmetic & personal care products
1. Exposure scenario	
Short title of the expo	
-	s - Washing & cleaning products - Cosmetic & personal care products
List of use descriptor	
Sector of use catego	
Product category (P	
	ROC): PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13.
	se category (ERC): ERC4 (SpERC: ESVOC 8)
	ibuting worker scenarios and corresponding PROCs: raying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or
bagging and weighin PROC8b Transfer of PROC9 Transfer of both capture vapour PROC10 Roller appl potential exposure a	substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to and aerosol emissions and minimise spillage. ication or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with
	environmental scenario and corresponding ERCs:
	active processing aid at industrial site (no inclusion into or onto article).
For further information on Chapter R.12: Use descrip European Chemical Indus	standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, tor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The ry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.
2. Conditions of use a	•
2.1 Control of worker General:	Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that
	have to be applied when using a low hazard substance are as follows:
	- Minimisation of manual phases/work tasks
	- Work procedures minimising splashes and spills
	- Avoidance of contact with contaminated tools and objects
	<ul> <li>Regular cleaning of equipment and work area</li> <li>Management/supervision in place to check that the RMMs in place are being used correctly</li> </ul>
	and OCs are followed
Product characteristi	and OCs are followed - Training for staff on good practice - Good standard of personal hygiene
Product characterist	and OCs are followed - Training for staff on good practice - Good standard of personal hygiene
Product characterist	and OCs are followed - Training for staff on good practice - Good standard of personal hygiene cs: - PROC8a, PROC8b, PROC9, PROC10, PROC13: Up to 100%. - PROC7: <=60%.
Product characteristi	and OCs are followed - Training for staff on good practice - Good standard of personal hygiene cs: - PROC8a, PROC8b, PROC9, PROC10, PROC13: Up to 100%.

Frequency and duration of use/exposure:	Duration: - PROC8a, PROC8b, PROC9, PROC10, PROC13: <=8 hours/day. - PROC7: >4 hours/day.
Human factors not influenced by risk management:	Exposed skin surface: - PROC9, PROC13: 480 cm2 (two hands, face side only). - PROC8a, PROC8b, PROC10: 960 cm2 (two hands).
Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C. Assessment tool used: - PROC8a, PROC8b, PROC9, PROC10, PROC13: CHESAR V2.2 Worker TRA v3. - PROC7: ECETOC TRA v3 for inhalation and dermal exposure. Deviation from ECETOC TRA: yes, a linear concentration reduction approach is used. The concentration of the substance in the product is taken into account following a linear concentration reduction approach instead of the default ECETOC TRA factors for modifying exposure due to percentage of substance in preparation.
Technical conditions and measures to control dispersion from source towards the worker:	<ul> <li>General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.</li> <li>Containment: <ul> <li>PROC8b, PROC9: Semi-closed process with occasional controlled exposure.</li> <li>PROC7, PROC8a, PROC10, PROC13: No.</li> </ul> </li> <li>Local exhaust ventilation: <ul> <li>PROC8a, PROC9, PROC10, PROC13: Yes (90% effectiveness).</li> <li>PROC7, PROC8b: Yes (95% effectiveness).</li> </ul> </li> <li>Occupational Health and Safety Management System: Advanced.</li> </ul>
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROC7: Gloves APF 20 (minimum efficiency dermal: 95%) - PROC8a, PROC8b, PROC9, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practive advice. Obligations according to Article 37(4) of REACH do not apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
Amounts used:	Maximum daily use at a site: 5 ton/day. Maximum annual use at a site: 100 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 220 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Indoor use. Industrial use. Release fraction to air from process (initial release): 0.30; (final release): 0.30. Local release rate: 1500 kg/day (SpERC ESVOC 8). Release fraction to wastewater from process (initial release): 0.0001; (final release): 0.0001. Local release rate: 0.5 kg/day (SpERC ESVOC 8). Release fraction to soil from process (final release): 0.0 (SpERC ESVOC 8).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

Conditions and measures relat treatment of waste for disposa	l: a	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)				
Conditions and measures relat		×			nply with applicable local and/or	nationa
recovery of waste:		regulations.				
Additional good practive advice according to Article 37(4) of Ri apply:	-	All risk management	measures utilis	sed must also co	mply with all relevant local regula	ations.
3. Exposure estimation and ref	erence to its source					
Health						
Information for contributing scen	nario (1): PROC7, PR	ROC10				
Assessment method: PROC10:	CHESAR v2.2 Work	ker TRA v3. PROC7:	ECETOC TRA	Worker v3. On	y highest figures are presented h	nere.
Exposure estimation:						
	Route	Exposure estin		<u>RCR</u>	<u>Notes</u>	
Worker, long-term, systemic	Dermal	2,743 mg/kg bv	ı/day	0,343	PROC10	
Worker, long-term, systemic	Inhalation	13,5 mg/m3		0,614	PROC7	
Worker, long-term, systemic	Combined rout	es N/A		0,774	PROC7	
Worker, acute, systemic	Dermal	2,743 mg/kg bv	//day	0,069	PROC10	
Worker, acute, systemic	Inhalation	54,06 mg/m3		0,492	PROC7	
Worker, acute, systemic	Combined rout	es N/A		0,524	PROC7	
Environment						
Information for contributing scent Assessment method: EUSES 2		RC ESVOC 8).				
Exposure estimation:						
<u>Compartment</u>	PEC	<u>R</u> (	<u>) R</u>	<u>Notes</u>		
Freshwater	0,00688 mg/L		,01			
Freshwater sediment	0,036 mg/kg dv	N <(	,01			
Marine water	0.000687 mg/L	. <(	,01			
Marine water sediment	0,00355 mg/kg	dw <(	,01			
Soil	0,012 mg/kg dv	w 0,	)27			
STP	0,032 mg/L	<(	,01			
Man via environment	0,023 mg/m3 / bw/day	0,025 mg/kg <(	,01 / <0,01	Inhalation / Ora	al	
Man via environment-Combine routes	d N/A	<(	,01			
RCR=Risk characterization ration	o (PEC/PNEC or Exp	oosure estimate/DNE	L); PEC=Predi	cted environme	ntal concentration.	
<ol> <li>Guidance to the Downstrean</li> </ol>						
Conc are a requi PRO with I PRO Perso eye i	litions outlined in Sec dopted, then users s red. Duration of acti C8a, PROC8b, PRO pasic employee train C8a, PROC9, PROC ponal protective equip	ction 2 are implemen hould ensure that ris vity: PROC8a, PROC C9, PROC10, PROC ing. PROC7: Gloves C10, PROC13: Yes ( ment (PPE) that has oggles. Concentratio	ed. Where oth ks are manage 8b, PROC9, F 13: Wear cher APF 20 (minim 0% effectivent to be applied v	er Risk Manage ed to at least equ PROC10, PROC mical resistant g num efficiency d ess). PROC7, P vhen using a lov	Management Measures/Operati ment Measures/Operational Con- ivalent levels. Indoor use, no res 13:<=8 hours/day; PROC7 >4 ho loves (tested to EN 374) in comb ermal: 95%). Local exhaust vent ROC8b: Yes (95% effectiveness) / hazard substance which causes DC8b, PROC9, PROC10, PROC	ditions spirator ours/day ination ilation: ). s seriou
Environment: Guid nece can b	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewate can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.					

# Short title of the exposure scenario:

Use at industrial sites - Industrial use as laboratory reagent

## List of use descriptors:

Process category (PROC): PROC15

Environmental release category (ERC): ERC4

List of names of contributing worker scenarios and corresponding PROCs:

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

## Name of contributing environmental scenario and corresponding ERCs:

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

# 2. Conditions of use affecting exposure

2.1 Control of workers exposure				
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard			
	substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that			
	have to be applied when using a low hazard substance are as follows:			
	- Minimisation of manual phases/work tasks			
	<ul> <li>Work procedures minimising splashes and spills</li> </ul>			
	<ul> <li>Avoidance of contact with contaminated tools and objects</li> </ul>			
	<ul> <li>Regular cleaning of equipment and work area</li> </ul>			
	- Management/supervision in place to check that the RMMs in place are being used correctly			
	and OCs are followed			
	- Training for staff on good practice			
	- Good standard of personal hygiene			
Product characteristics:	Concentration of substance: Up to 100%.			
Frequency and duration of use/exposure:	Duration: <=8 hours/day.			
Human factors not influenced by risk management:	Exposed skin surface: 240 cm2 (one hand, face side only).			
Other given operational conditions affecting	Location: Indoor use.			
workers exposure:	Domain: Industrial use.			
	Process temperature (for liquid): <= 40 °C.			
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.			
dispersion from source towards the worker:	Containment: No.			
	Local exhaust ventilation: Yes (90% effectiveness).			
	Occupational Health and Safety Management System: Advanced.			
Conditions and measures related to personal	Respiratory protection: Not required.			
protection, hygiene and health evaluation:	Chemical safety goggles.			
	Dermal protection: No (Effectiveness Dermal: 0%).			
Additional good practive advice. Obligations	Generally accepted standards of occupational hygiene are maintained.			
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks.			
apply:	Minimisation of splashes and spills.			
	Avoidance of contact with contaminated tools and objects.			
	Regular cleaning of equipment and work area.			
	Training staff on good practice.			
	Management/supervision in place to check that RMMs in place are being used correctly and			
	OCs followed.			
2.2 Control of environmental exposure				
Product characteristics:	Physical state: liquid.			
	Vapour pressure: 7 Pa at 20 °C			
Amounts used:	Maximum daily use at a site: 0.25 ton/day.			
	Maximum annual use at a site: 5 tons/year.			
	Percentage of tonnage used at regional scale: 10 %.			
Frequency and duration of use:	Emission days: 20 days/year.			
Environmental factors not influenced by risk	Flow rate of receiving surface water: >=18000 m3/day (default).			
management:	- , ,			
Other given operational conditions affecting	Indoor use.			
environmental exposure:	Industrial use.			
- -	Release fraction to air from process (initial release): 1.0; (final release): 1.0. Local release			
	rate: 250 kg/day.			
	Release fraction to wastewater from process (initial release): 1.0; (final release): 0.0. Local			
	release rate: 0 kg/day.			
	Release fraction to soil from process (final release): 0.05.			

Technical conditions and measur level (source) to prevent release:	ch in	Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all used chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.				
Technical onsite conditions and r		ry sludge applic	ation to agricultu	ral soil: Yes (defa	ult).	
reduce or limit discharges, air en releases to soil:	hissions and					
Conditions and measures related	to municipal M	unicipal Sewag	- Treatment Plan	nt (STP): Yes ( Ef	ficiency=87.36%).	
sewage treatment plant:					•=2000 m3/day (standard town).	
Conditions and measures related				· · · · · · · · · · · · · · · · · · ·	perations: No (low risk) (ERC based	
treatment of waste for disposal:	as	ssessment dem	onstrating contro	l of risk with defa	ult conditions. Low risk assumed for	
		-	-	-	nal/local legislation is sufficient.)	
Conditions and measures related			and recycling of	waste should co	mply with applicable local and/or national	
recovery of waste:		gulations.				
Additional good practive advice. ( according to Article 37(4) of REA apply:	-	ii risk managem	ent measures uti	lised must also co	omply with all relevant local regulations.	
3. Exposure estimation and refere	ence to its source					
Health						
Information for contributing scenar	rio (1): PROC15					
Assessment method: CHESAR V2	2.2 Worker TRA v3.					
Exposure estimation:						
	<u>Route</u>	<u>Exposure e</u>	stimate	RCR	<u>Notes</u>	
Worker, long-term, systemic	Dermal	0,34 mg/kg	bw/day	0,043		
Worker, long-term, systemic	Inhalation	2,253 mg/m	3	0,102		
Worker, long-term, systemic	Combined route	s N/A		0,145		
Worker, acute, systemic	Dermal	0.34 mg/kg	bw/day	<0,01		
Worker, acute, systemic	Inhalation	9,011 mg/m	3	0,082		
Worker, acute, systemic	Combined route	s N/A		0,09		
Environment						
Information for contributing scenar	rio (2): ERC4					
Assessment method: EUSES 2.1.	2.					
Exposure estimation:						
Compartment	<u>PEC</u>		<u>RCR</u>	<u>Notes</u>		
Freshwater	0,00372 mg/L		<0,01			
Freshwater sediment	0,019 mg/kg dw		<0,01			
Marine water	0,000371 mg/L		<0,01			
Marine water sediment	0,00192 mg/kg o	w	<0,01			
Soil	0,00821 mg/kg c	w	0,018			
STP	0 mg/L		<0,01			
Man via environment	0,00389 mg/m3 bw/day	/ 0,0047 mg/kg	<0,01 / <0,01	Inhalation / Or	al	
Man via environment-Combined routes	N/A		<0,01			
RCR=Risk characterization ratio (	PEC/PNEC or Expo	sure estimate/E	NEL); PEC=Pre	dicted environme	ntal concentration.	
4. Guidance to the Downstream L						
Health: Predicte Conditionare ado required equipm	ed exposures are no ons outlined in Sect pted, then users sh d. Duration of activi	ot expected to e ion 2 are implen ould ensure tha ty: <=8 hours/da to be applied wh	xceed the DN(M) nented. Where of t risks are manag ay. Local exhaus nen using a low h	EL when the Ris ther Risk Manage ged to at least equ st ventilation: Yes azard substance	k Management Measures/Operational ement Measures/Operational Conditions uivalent levels. Indoor use, no respirator (90% effectiveness). Personal protective which causes serious eye irritation:	
Environment: Guidan necessa can be	ce is based on assu ary to define approp achieved using ons	imed operating priate site-specif ite/offsite techno	conditions which ic risk managem blogies, either alc	may not be appli ent measures. Re one or in combina	cable to all sites; thus, scaling may be equired removal efficiency for wastewater tion. If scaling reveals a condition of ety assessment is required.	

### Exposure scenario (14): Use by professional workers - Professional use - Indoor

#### 1. Exposure scenario (14)

#### Short title of the exposure scenario:

Use by professional workers - Professional use - Indoor

#### List of use descriptors:

Sector of use category (SU): SU0, SU19

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25.

Environmental release category (ERC): ERC8a

#### List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC11 Non industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

PROC21 Low energy manipulation and handling of substances bound in/on materials or articles. Cover activities such as manual cutting, cold rolling or assembly/disassembly of material/article.

PROC23 Open processing and transfer operations at substantially elevated temperature. Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations.

PROC24 High (mechanical) energy work-up of substances bound in /on materials and/or articles. Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping.

PROC25 Other hot work operations with metals. Welding, soldering, gouging, brazing, flame cutting.

#### Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R. 12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

## 2. Conditions of use affecting exposure

## 2.1 Control of workers exposure General: Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Respiratory protection: PROC11: Yes (mimimum efficiency inhalation: 90%). General RMMs/OCs that have to be applied when using a low hazard substance are as follows: - Minimisation of manual phases/work tasks - Work procedures minimising splashes and spills - Avoidance of contact with contaminated tools and objects - Regular cleaning of equipment and work area - Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed - Training for staff on good practice - Good standard of personal hygiene PROC11 additional RMMs/OCs: Workers wear chemical resistant protective clothing including gloves covering the whole body and for a period of 1 shift (8 hours). Respiratory protection: Yes (minimum efficiency inhalation: 90%).

Product characteristics:	Concentration of substance: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13: up to 100%. - PROC14, PROC21, PROC23, PROC24, PROC25: >25 %. - PROC11: 50%; 80%. Physical state: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13: liquid. - PROC14: solid. - PROC21, PROC23, PROC24, PROC25: solid-included into or onto a matrix. Vapour pressure: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14: <7 Pa at 20 °C. - PROC23, PROC25: 1000 Pa. Fugacity: Medium (applicable only to PROC14 & PROC21). - PROC14: Low - PROC14: Low
Frequency and duration of use/exposure:	<ul> <li>PROC21: Medium</li> <li>Duration of activity:</li> <li>PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: &gt;4-8 hours/day.</li> <li>PROC11 (50%, Level, use rate 0,5 L substance/minute):&lt;70 minutes/day.</li> <li>PROC11 (80%, Level, use rate 0,8 L substance/minute):&lt;60 minutes/day.</li> <li>PROC11 (50%, Overhead, use rate 0,5 L substance/minute):&lt;25 minutes/day.</li> <li>PROC11 (80%, Overhead, use rate 0,8 L substance/minute):&lt;20 minutes/day.</li> </ul>
Human factors not influenced by risk management:	Exposed skin surface: - PROC9, PROC14: 240 cm2 (one hand, face side only). - PROC5, PROC8a, PROC8b, PROC13: 480 cm2 (two hands, face side only). - PROC6, PROC10, PROC21: 960 cm2 (two hands).
Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Professional use. Process temperature (for liquid): <= 20 °C. Assessment tool used: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21: ECETOC TRA v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. - PROC23, PROC24, PROC25: ECETOC TRA v3 for inhalation and dermal exposure. - PROC11: RiskofDerm Tier 2 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.
	Deviation from Advanced REACH Tool: PROC11: Respiratory protective equipment.
Technical conditions and measures at process level (source) to prevent release:	Spray direction: - PROC11 (Level): Only horizontal or downward spraying, away from the worker. - PROC11 (Overhead): Spraying in any direction (including upwards), away from the worker.
Technical conditions and measures to control dispersion from source towards the worker:	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation:	<ul> <li>Respiratory protection:</li> <li>PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Not required.</li> <li>PROC11: Yes (mimimum efficiency inhalation: 90%).</li> <li>Chemical safety goggles.</li> <li>Dermal protection: Yes.</li> <li>PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Gloves APF 5 (minimum efficiency dermal: 80%).</li> <li>PROC11: chemically resistant gloves conforming to EN374 with basic employee training (Effectiveness Dermal: 90%).</li> </ul>

Additional good practive advice. Obligations according to Article 37(4) of REACH do not apply:	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid. Vapour pressure: 7 Pa at 20 °C
Amounts used:	Daily wide dispersive use: 0.00055 tons/day. Maximum annual use at a site: 1000 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Indoor use. Professional use. Release fraction to air from process (initial release): 1.0; (final release): 1.0. Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 0.55 kg/day. Release fraction to soil from process (final release): 0.0.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practive advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.
3. Exposure estimation and reference to its sour	ce

Information for contributing scenario (1): PROC11 (80%), PROC23.

Assessment method: PROC11: RiskofDerm Tier 2 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. PROC23: ECETOC TRA v3 for inhalation and dermal exposure. Only highest figures are presented here.

Exposure	estimation:
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<u>Route</u>	Exposure estimate	<u>RCR</u>	<u>Notes</u>	
Dermal	7,7 mg/kg bw/day	0,963	PROC11 (80%)	
Inhalation	20 mg/m3	0,909	PROC23	
Combined routes	N/A	0,999	PROC11 (80%)	
Dermal	15,6 mg/kg bw/day	0,39	PROC11 (80%)	
Inhalation	80 mg/m3	0,727	PROC23	
Combined routes	N/A	0,734	PROC23	
	Dermal Inhalation Combined routes Dermal Inhalation	Dermal7,7 mg/kg bw/dayInhalation20 mg/m3Combined routesN/ADermal15,6 mg/kg bw/dayInhalation80 mg/m3	Dermal         7,7 mg/kg bw/day         0,963           Inhalation         20 mg/m3         0,909           Combined routes         N/A         0,999           Dermal         15,6 mg/kg bw/day         0,39           Inhalation         80 mg/m3         0,727	Dermal         7,7 mg/kg bw/day         0,963         PROC11 (80%)           Inhalation         20 mg/m3         0,909         PROC23           Combined routes         N/A         0,999         PROC11 (80%)           Dermal         15,6 mg/kg bw/day         0,39         PROC11 (80%)           Inhalation         80 mg/m3         0,727         PROC23

Environment

Information for contributing scenario (2): ERC8a

Assessment method: EUSES 2.1.2.

Exposure estimation:

Compartment	PEC	<u>RCR</u>	<u>Notes</u>	
Freshwater	0,0072 mg/L	<0,01		
Freshwater sediment	0,037 mg/kg dw	<0,01		

Compartment	PEC	<u>RCR</u>	Notes
Marine water	0,000719 mg/L	<0,01	
Marine water sediment	0,00371 mg/kg dw	<0,01	
Soil	0,00874 mg/kg dw	0,019	
STP	0,035 mg/L	<0,01	
Man via environment	0,0000842 mg/m3 / 0,00074 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Health: Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use. Respiratory protection: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: no respirator required. PROC11: Yes (mimimum efficiency inhalation: 90%). Duration of activity: PROC5. PROC6. PROC8a. PROC8b. PROC9. PROC10. PROC13. PROC14. PROC21. PROC23. PROC24. PROC25: >4-8 hours/day. PROC11 (50%, Level, use rate 0,5 L substance/minute):<70 minutes/day. PROC11 (80%, Level, use rate 0,8 L substance/minute):<60 minutes/day. PROC11 (50%, Overhead, use rate 0,5 L substance/ minute):<25 minutes/day. PROC11 (80%, Overhead, use rate 0,8 L substance/minute):<20 minutes/day. Dermal protection: Yes. PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Gloves APF 5 (minimum efficiency dermal: 80%). PROC11: chemically resistant gloves conforming to EN374 with basic employee training (Effectiveness Dermal: 90%). Local exhaust ventilation: Not required. Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10: up to 100%. PROC14, PROC21, PROC23, PROC24, PROC25: >25 %. PROC11: 50%; 80%. Environment: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (15): Use by professional workers - Professional use - Outdoor

1. Exposure scenario (15)

Short title of the exposure scenario:

Use by professional workers - Professional use - Outdoor

## List of use descriptors:

Sector of use category (SU): SU0

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25.

Environmental release category (ERC): ERC8d

List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC11 Non industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC13 Treatment of articles by dipping and pouring.

PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

PROC21 Low energy manipulation and handling of substances bound in/on materials or articles. Cover activities such as manual cutting, cold rolling or assembly/disassembly of material/article.

PROC23 Open processing and transfer operations at substantially elevated temperature. Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations.

PROC24 High (mechanical) energy work-up of substances bound in /on materials and/or articles. Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping.

PROC25 Other hot work operations with metals. Welding, soldering, gouging, brazing, flame cutting.

## Name of contributing environmental scenario and corresponding ERCs:

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

#### 2. Conditions of use affecting exposure

2.1 Control of workers exposure	
General:	<ul> <li>Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Respiratory protection: PROC11: Yes (mimimum efficiency inhalation: 90%).</li> <li>General RMMs/OCs that have to be applied when using a low hazard substance are as follows: <ul> <li>Minimisation of manual phases/work tasks</li> <li>Work procedures minimising splashes and spills</li> <li>Avoidance of contact with contaminated tools and objects</li> <li>Regular cleaning of equipment and work area</li> <li>Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed</li> <li>Training for staff on good practice</li> <li>Good standard of personal hygiene</li> </ul> </li> </ul>
	PROC11 additional RMMs/OCs: Workers wear chemical resistant protective clothing including gloves covering the whole body and for a period of 1 shift (8 hours). Respiratory protection: Yes (mimimum efficiency inhalation: 90%).
Product characteristics:	Concentration of substance: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13: up to 100%. - PROC10: 80%. - PROC14, PROC21, PROC23, PROC24, PROC25: >25 %. - PROC11: 50%; 80%. Physical state: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13: liquid. - PROC14, PROC21: solid. - PROC23, PROC24, PROC25: solid-included into or onto a matrix. Vapour pressure: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14: <7 Pa at 20 °C. - PROC23: 1000 Pa. Fugacity: Medium (applicable only to PROC23, PROC24, PROC25). Dustiness of solids: (applicable only to PROC14 & PROC21). - PROC14: Low - PROC21: Medium
Frequency and duration of use/exposure:	<ul> <li>Duration of activity:</li> <li>PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: &gt;4-8 hours/day.</li> <li>PROC11 (50%, Level, use rate 0,5 L substance/minute):&lt;120 minutes/day.</li> <li>PROC11 (80%, Level, use rate 0,8 L substance/minute):&lt;120 minutes/day.</li> <li>PROC11 (50%, Overhead, use rate 0,5 L substance/minute):&lt;55 minutes/day.</li> <li>PROC11 (80%, Overhead, use rate 0,8 L substance/minute):&lt;45 minutes/day.</li> </ul>
Human factors not influenced by risk management:	Exposed skin surface: - PROC9, PROC14: 240 cm2 (one hand, face side only). - PROC5, PROC8a, PROC8b, PROC13: 480 cm2 (two hands, face side only). - PROC6, PROC10, PROC21: 960 cm2 (two hands).

Location: Outdoor use. Domain: Professional use. Process temperature (for liquid): <= 20 °C.			
Assessment tool used: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21: ECETOC TRA v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation			
exposure.			
<ul> <li>PROC23, PROC24, PROC25: ECETOC TRA v3 for inhalation and dermal exposure.</li> <li>PROC11: RiskofDerm Tier 2 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.</li> </ul>			
Deviation from Advanced REACH Tool: PROC11: Respiratory protective equipment.			
Spray direction:			
<ul> <li>PROC11 (Level): Only horizontal or downward spraying, away from the worker.</li> <li>PROC11 (Overhead): Spraying in any direction (including upwards), away from the worket</li> </ul>			
General ventilation: Outdoors.			
Occupational Health and Safety Management System: Basic.			
Respiratory protection: - PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Not required.			
- PROC11: Yes (mimimum efficiency inhalation: 90%).			
Chemical safety goggles.			
Dermal protection: Yes.			
<ul> <li>PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Gloves APF 5 (minimum efficiency dermal: 80%).</li> </ul>			
<ul> <li>PROC21, PROC23, PROC24, PROC25, Gloves AP1 3 (minimum enciency definal: do %).</li> <li>PROC11: chemically resistant gloves conforming to EN374 with basic employee training</li> </ul>			
(Effectiveness Dermal: 90%).			
Generally accepted standards of occupational hygiene are maintained.			
Minimisation of manual phases/work tasks.			
Minimisation of splashes and spills.			
Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area.			
Training staff on good practice.			
Management/supervision in place to check that RMMs in place are being used correctly an			
OCs followed.			
Physical state: liquid.			
Vapour pressure: 7 Pa at 20 °C			
Daily wide dispersive use: 0.00055 tons/day.			
Maximum annual use at a site: 1000 tons/year.			
Percentage of tonnage used at regional scale: 10 %.			
Emission days: <=365 days/year.			
Flow rate of receiving surface water: >=18000 m3/day (default).			
Outdoor use.			
Professional use.			
Release fraction to air from process (initial release): 1.0; (final release): 1.0.			
Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local			
release rate: 0.55 kg/day.			
Release fraction to soil from process (final release): 0.20. Dry sludge application to agricultural soil: Yes (default).			
Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).			

Additional good practive advice. Obligations All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and refer	rence to its source			
Health				
Information for contributing scena	ario (1): PROC10, PRO	C11 (50%), PROC23.		
				v1.5) for inhalation exposure. PROC11:
		· ,	halation exposure. F	PROC23: ECETOC TRA v3 for inhalation
and dermal exposure. Only highe	<b>e</b> 1			
Exposure estimation: RPE=Resp equipment.	iratory protection equip	ment. PROC8a and PROC	C10 evaluated both	with and without respiratory protection
	Route	Exposure estimate	RCR	Notes
Worker, long-term, systemic	Dermal	6,85 mg/kg bw/day	0,856	PROC11 (50%)
Worker, long-term, systemic	Inhalation	20 mg/m3	0,909	PROC23
Worker, long-term, systemic	Combined routes	N/A	0,977	PROC10
Worker, acute, systemic	Dermal	13,7 mg/kg bw/day	0,343	PROC11 (50%)
Worker, acute, systemic	Inhalation	80 mg/m3	0,727	PROC23
Worker, acute, systemic	Combined routes	N/A	0,734	PROC23
Environment				
Information for contributing scena	ario (2): ERC8d			
Assessment method: EUSES 2.1	.2.			
Exposure estimation:				
Compartment	PEC	RCR	<u>Notes</u>	
Freshwater	0,0072 mg/L	<0,01		
Freshwater sediment	0,037 mg/kg dw	<0,01		
Marine water	0,000719 mg/L	<0,01		
Marine water sediment	0,00371 mg/kg dw	<0,01		

Soil	0,00874 mg/kg dw	0,019
STP	0,035 mg/L	<0,01
Man via environment	0,0000842 mg/m3 / 0,00074 mg/kg bw/day	<0,01 / <0,01 Inhalation / Oral
Man via environment-Combined	N/A	<0,01

routes

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

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

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational					
	Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions					
	are adopted, then users should ensure that risks are managed to at least equivalent levels. Outdoor use. Respiratory					
	protection: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23,					
	PROC24, PROC25: no respirator required. PROC11: Yes (mimimum efficiency inhalation: 90%). Duration of activity:					
	PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC21, PROC23, PROC24,					
	PROC25: >4-8 hours/day. PROC11 (50%, Level, use rate 0,5 L substance/minute):<120 minutes/day. PROC11 (80%, Level, use rate 0,8 L substance/minute):<120 minutes/day. PROC11 (50%, Overhead, use rate 0,5 L substance/minute):<55 minutes/day. PROC11 (80%, Overhead, use rate 0,8 L substance/minute):<45 minutes/day. Dermal					
	protection: Yes. PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25: Gloves APF 5 (minimum efficiency dermal: 80%). PROC11: chemically resistant gloves					
	conforming to EN374 with basic employee training (Effectiveness Dermal: 90%). Personal protective equipment (PPE)					
	that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles.					
	Concentration of substance: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13: up to 100%. PROC10: 80%.					
	PROC14, PROC21, PROC23, PROC24, PROC25: >25 %. PROC11: 50%; 80%.					
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be					
	necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater					
	can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of					
	unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.					

## Exposure scenario (16): Use by professional workers - Professional use as laboratory reagent

## 1. Exposure scenario (16)

## Short title of the exposure scenario:

Use by professional workers - Professional use as laboratory reagent

#### List of use descriptors:

Product category (PC): PC21

Process category (PROC): PROC15

2. Conditions of use affecting exposure

Environmental release category (ERC): ERC8a

## List of names of contributing worker scenarios and corresponding PROCs:

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

## Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

2.1 Control of workers exposure	
General:	Personal protective equipment (PPE) that has to be applied when using a low hazard
	substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that
	have to be applied when using a low hazard substance are as follows:
	<ul> <li>Minimisation of manual phases/work tasks</li> </ul>
	<ul> <li>Work procedures minimising splashes and spills</li> </ul>
	<ul> <li>Avoidance of contact with contaminated tools and objects</li> </ul>
	<ul> <li>Regular cleaning of equipment and work area</li> </ul>
	- Management/supervision in place to check that the RMMs in place are being used correctl
	and OCs are followed
	- Training for staff on good practice
	- Good standard of personal hygiene
Product characteristics:	Concentration of substance: Up to 100%.
	Physical state: liquid.
Frequency and duration of use/exposure:	Duration: <=8 hours/day.
Human factors not influenced by risk	Exposed skin surface: 240 cm2 (one hand, face side only).
management:	
Other given operational conditions affecting	Location: Indoor use.
workers exposure:	Domain: Professional use.
	Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.
dispersion from source towards the worker:	Containment: No.
	Local exhaust ventilation: Yes (80% effectiveness).
	Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal	Respiratory protection: Not required.
protection, hygiene and health evaluation:	Chemical safety goggles.
	Dermal protection: No (Effectiveness Dermal: 0%).
Additional good practive advice. Obligations	Generally accepted standards of occupational hygiene are maintained.
according to Article 37(4) of REACH do not	Minimisation of manual phases/work tasks.
apply:	Minimisation of splashes and spills.
	Avoidance of contact with contaminated tools and objects.
	Regular cleaning of equipment and work area.
	Training staff on good practice.
	Management/supervision in place to check that RMMs in place are being used correctly and
	OCs followed.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid.
	Vapour pressure: 7 Pa at 20 °C
Amounts used:	Daily wide dispersive use: <=0.01 tons/day.
	Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Wide dispersive use.
Environmental factors not influenced by risk	Flow rate of receiving surface water: >=18000 m3/day (default).
management:	

Other given operational conditions environmental exposure:	Pro Rel Rel rele	Indoor use. Professional use. Release fraction to air from process (initial release): 1.0; (final release): 1.0. Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 10 kg/day. Release fraction to soil from process (final release): 0.0.				
Technical onsite conditions and m reduce or limit discharges, air emi releases to soil:	· · · · · · · · · ·	sludge appli	cation to agricultu	ral soil: Yes (defa	ult).	
Conditions and measures related sewage treatment plant:			ge Treatment Plan I sewage system/	. , .	ficiency=87.36%). י=2000 m3/day (standard town).	
Conditions and measures related treatment of waste for disposal:	ass	essment den	nonstrating contro	l of risk with defau	verations: No (low risk) (ERC based ult conditions. Low risk assumed for nal/local legislation is sufficient.)	
Conditions and measures related recovery of waste:	<b>to external</b> Ext reg	ernal recover ulations.	y and recycling of	waste should co	mply with applicable local and/or national	
Additional good practive advice. C according to Article 37(4) of REAC apply:	-	risk managen	nent measures uti	lised must also co	omply with all relevant local regulations.	
3. Exposure estimation and referent Health						
Information for contributing scenario	o (1): PROC15					
Assessment method: CHESAR V2.	2 Worker TRA v3.					
Exposure estimation:						
Worker, long-term, systemic	<u>Route</u> Dermal	<u>Exposure</u> 0,34 mg/kg		<u>RCR</u> 0,043	<u>Notes</u>	
Worker, long-term, systemic	Inhalation	4,506 mg/r	m3	0,205		
Worker, long-term, systemic	Combined routes	N/A		0,247		
Worker, acute, systemic	Dermal	0,34 mg/kg	g bw/day	<0,01		
Worker, acute, systemic	Inhalation	18,02 mg/r	m3	0,164		
Worker, acute, systemic	Combined routes	N/A		0,172		
Environment						
Information for contributing scenario Assessment method: EUSES 2.1.2 Exposure estimation:						
Compartment	PEC		RCR	<u>Notes</u>		
Freshwater	0,067 mg/L		0,067			
Freshwater sediment	0,346 mg/kg dw		0,066			
Marine water	0,0069 mg/L		0,067			
Marine water sediment	0,035 mg/kg dw		0,066			
Soil	0,028 mg/kg dw		0,062			
STP	0,632 mg/L		0,016			
Man via environment	0,0000847 mg/m3 mg/kg bw/day	3 / 0,00237	<0,01 / <0,01	Inhalation / Or	al	
Man via environment-Combined routes	N/A		<0,01			
RCR=Risk characterization ratio (P		ure estimato/		dicted environmo	ntal concentration	
4. Guidance to the Downstream Us						
Health: Predicted Condition are adop required equipme	d exposures are not ns outlined in Sectio ted, then users sho . Duration of activity	expected to n 2 are imple uld ensure tha n: <=8 hours/o be applied w	exceed the DN(M) mented. Where of at risks are manag day. Local exhaus /hen using a low h	EL when the Risk ther Risk Manage ged to at least equ st ventilation: Yes azard substance	k Management Measures/Operational ment Measures/Operational Conditions uvalent levels. Indoor use, no respirator (80% effectiveness). Personal protective which causes serious eye irritation:	

Environment: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

### Exposure scenario (17): Consumer use - Consumer uses

#### 1. Exposure scenario (17)

### Short title of the exposure scenario:

## Consumer use - Consumer uses

### List of use descriptors:

Product category (PC): PC1, PC3, PC9a, PC9b, PC18, PC23, PC28, PC31, PC34, PC35, PC39. Environmental release category (ERC): ERC8a, ERC8d

#### Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

#### Further explanations:

PC1 Adhesives, sealants: Joint sealant; Tube glue; Universal/wood glue; Construction glue; Spray glue; Wood parquet glue, Mixing/Loading; Wood parquet glue, Application; Filler/Putty from tube; Two-component filler, Mixing/Loading; Two-component filler, Application; Putty spray. PC3 Air care products: Spray application (child, post application); Spray application; Electrical evaporators; Electrical evaporators (child, post application).

PC9a Coatings and paints, thinners, paint removers: General coating; Paint remover; Brush & roller painting with solvent rich paint; Brush & roller painting with water borne paint; Pneumatic spraying.

PC9b Fillers, putties, plasters, modelling clay: Wall plaster.

PC18 Ink and toners.

PC23 Leather treatment products: Shoe polish spray; Shoe cream.

PC28 Perfumes, fragrances: Perfumed articles; Perfumed candles.

PC31 Polishes and wax blends: Shoe polish spray; Shoe cream; Floor polish; Floor sealer.

PC34 Textile dyes, and impregnating products: Loading of washing machines with liquid detergent; Manual washing with liquid detergent; Residues on clothing after washing with liquid detergent; Use of pastes.

PC35 Washing and cleaning products: Loading of washing machines with liquid detergent; Manual washing with liquid detergent; Residues on clothing after washing with liquid detergent; Use of pastes; Use of All Purpose Cleaner (Liquid Cleaner, Mixing/Loading; Liquid Cleaner, Application; Spray Cleaner, Spraying; Spray Cleaner, Cleaning)' Use of Sanitary Products (Bathroom cleaning liquid, Mixing/Loading; Bathroom cleaning liquid, Application; Bathroom cleaning spray, Spraying; Bathroom cleaning spray, Cleaning; Liquid toilet rim cleaner). PC39 Cosmetics, personal care products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance\_document/information\_requirements\_r12\_en.pdf).

# 2. Conditions of use affecting exposure

2.1 Control of consumer exposure General:

PC28 & PC39: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation. Product characteristics:

Concentration of substance: Unless otherwise stated, covers concentrations up to 25%.

- PC1: (Two-component filler, Application) - up to 15%; (Wood parquet glue, Application) - up to 5%.

- PC3 (Spray application,child, post application; Spray application; Electrical evaporators; Electrical evaporators, child, post application - up to 10%.

- PC9a: (General coating) - up to 10%; (Brush & roller painting with solvent rich paint; Brush

& roller painting with water borne paint; Pneumatic spraying) - up to 5%.

- PC9b: (Wall plaster) - up to 10%.

- PC18: (Ink and Toners) - up to 5%.

- PC23: (Shoe polish spray; Shoe cream) - up to 5%.

- PC28: (Perfumed candles) - up to 1.8%; (Perfumed articles) - up to 0.1%.

- PC31: (Shoe polish spray; Shoe cream; Floor polish; Floor sealer) - up to 5%.

- PC34: (Loading of washing machines with liquid detergent) - up to 10%; (Use of pastes) - up to 1%; (Manual washing with liquid detergent) - up to 0.1%; (Residues on clothing after washing with liquid detergent) - up to 0.01%.

PC35: (Loading of washing machines with liquid detergent; Liquid cleaner, Mixing/Loading; Spray cleaner, Spraying; Spray cleaner, Cleaning; Bathroom cleaning liquid, Mixing/Loading; Bathroom cleaning spray, Spraying; Bathroom cleaning spray, Cleaning; Liquid toilet rim cleaner) - up to 10%; (Use of pastes) - up to 1%; (Bathroom cleaning liquid, Application) - up to 0.22%; (Liquid cleaner, Application) - up to 0.12%; (Manual washing with liquid detergent)
- up to 0.1%; (Residues on clothing after washing with liquid detergent) - up to 0.01%. Physical state: liquid.

Vapour pressure: Unless otherwise stated <7 Pa at 20 °C. PC28 (Perfumed candles): <139 Pa at 20 °C.

Average molecular weight of the matrix (product minus the compound of interest):

- PC1: (Joint sealant; Tube glue; Universal/wood glue; Construction glue; Wood parquet glue, Mixing/Loading; Wood parquet glue, Application; Filler/Putty from tube; Two-

component filler, Mixing/Loading; Two-component filler, Application): 3000 g/mol.

- PC9a: (General coating, Paint remover; Brush & roller painting with solvent rich paint): 300 g/mol; (Brush & roller painting with water borne paint): 45 g/mol.

- PC18: (Ink and Toners): 300 g/mol.

- PC31: (Floor polish; Floor sealer): 22 g/mol.

- PC34: (Loading of washing machines with liquid detergent): 90 g/mol.

- PC35: (Liquid cleaner, Mixing/Loading; Spray cleaner, Cleaning): 22 g/mol; (Loading of washing machines with liquid detergent): 90 g/mol; (Liquid cleaner, Application; Bathroom cleaning liquid, Application): 18 g/mol; (Bathroom cleaning liquid, Mixing/Loading): 26 g/mol; (Bathroom cleaning spray, Cleaning): 36 g/mol.

Airborne fraction of the non-volatile material:

- PC1: (Spray glue; Putty spray): 100%.
- PC3: (Electrical evaporators): 100%; (Spray application): 30%.
- PC9a: (Pneumatic spraying): 20%.
- PC23: (Shoe polish spray): 100%.
- PC31: (Shoe polish spray): 100%.
- PC35: (Spray Cleaner, Spraying; Bathroom cleaning spray, Spraying): 20%.

Weight fraction of the non-volatile material:

- PC1: (Spray glue): 25%; (Putty spray): 30%.
- PC3: (Electrical evaporators; Spray application): 90%.
- PC9a: (Pneumatic spraying): 50%.
- PC23: (Shoe polish spray): 5%.
- PC31: (Shoe polish spray): 5%.
- PC35: (Spray Cleaner, Spraying; Bathroom cleaning spray, Spraying): 10%.

Amounts used:

Applied amounts for each use event:

PC1: (Joint sealant): covers amounts up to 75 g (inhalation); Dermal contact rate 50 mg/ min for 30 min; (Tube glue): covers amounts up to 9 g (inhalation); 0.08 g (dermal); (Universal/wood glue): covers amounts up to 10 g (inhalation); 0.08 g (dermal); (Construction glue): covers amounts up to 250 g (inhalation); 0.25 g (dermal); (Spray glue): Inhalation mass generation rate 1.5 g/sec for spray duration 2.8 min; Dermal contact rate 100 mg/min for 2.8 min; (Wood parquet glue, Mixing/Loading): covers amounts up to 22000 g (inhalation); 0.2 g (dermal); (Wood parquet glue, Application): covers amounts up to 22000 g (inhalation); Dermal contact rate 30 mg/min for 300 min; (Filler/Putty from tube): covers amounts up to 40 g (inhalation); 0.05 g (dermal); (Two-component filler, Mixing/Loading): covers amounts up to 200 g (inhalation); 0.2 g (dermal); Dermal contact rate 30 mg/min for 300 min; (Filler/Putty from tube): covers amounts up to 200 g (inhalation); 0.2 g (dermal); (Dvers amounts up to 200 g (inhalation); 0.2 g (dermal); (Two-component filler, Mixing/Loading): covers amounts up to 200 g (inhalation); 0.2 g (dermal); (Putty spray): Inhalation mass generation rate 1.5 g/sec for spray duration 2.2 min; Dermal contact rate 100 mg/min for 2.2 min.

- PC3: (Spray application (child, post application)): Dermal contact rate 269 mg/min for 0,33 min; (Spray application): Inhalation mass generation rate 1,1 g/sec for spray duration 0,33 min; Dermal contact rate 269 mg/min for 0,33 min; (Electrical evaporators): Inhalation mass generation rate 0,000022 g/sec for spray duration 480 min; (Electrical evaporators (child, post application)): Dermal contact rate 269 mg/min for 0,33 min.

- PC9a: (General coating): covers amounts up to 4000 g (inhalation); 0.25 g (dermal); (Paint remover): covers amounts up to 1000 g (inhalation); 0.5 g (dermal); (Brush & roller painting with solvent rich paint): covers amounts up to 1000 g (inhalation); Dermal contact rate 30 mg/min for 180 min; (Brush & roller painting with water borne paint): covers amounts up to 1250 g (inhalation); Dermal contact rate 30 mg/min for 480 min; (Pneumatic spraying): Inhalation mass generation rate 0.5 g/sec for spray duration 180 min; Dermal contact rate 110 mg/min for 180 min.

- PC9b: (Wall plaster): Dermal contact rate 50 mg/min for 120 min.

- PC18: (Ink and Toners): covers amounts up to 1000 g (inhalation); Dermal contact rate 30 mg/min for 120 min.

- PC23: (Shoe polish spray): Inhalation mass generation rate 0.5 g/sec for spray duration 1.2 min; Dermal contact rate 100 mg/min for 1.2 min; (Shoe cream): covers amounts up to 0.1 g (inhalation); 0.1 g (dermal).

- PC28: (Perfumed articles): covers amounts up to 100 g (inhalation); 100 g (dermal); (Perfumed candles): covers amounts up to 100 g (inhalation).

- PC31: (Shoe polish spray): Inhalation mass generation rate 0.5 g/sec for spray duration 1.2 min; Dermal contact rate 100 mg/min for 1.2 min; (Shoe cream): covers amounts up to 0.1 g (inhalation); 0.1 g (dermal); (Floor polish): covers amounts up to 550 g (inhalation); 5.5 g (dermal); (Floor sealer): covers amounts up to 1500 g (inhalation); 15 g (dermal).

- PC34: (Loading of washing machines with liquid detergent): covers amounts up to 500 g (inhalation); 0.01 g (dermal); (Manual washing with liquid detergent): covers amounts up to 19 g (inhalation); 19 g (dermal); (Residues on clothing after washing with liquid detergent): covers amounts up to 1000 g (dermal); (Use of pastes): covers amounts up to 0.65 g (inhalation); 0.65 g (dermal).

- PC35: (Loading of washing machines with liquid detergent; Liquid cleaner, Mixing/Loading; Bathroom cleaning liquid, Mixing/Loading): covers amounts up to 500 g (inhalation); 0.01 g (dermal); (Manual washing with liquid detergent): covers amounts up to 19 g (inhalation); 19 g (dermal); (Residues on clothing after washing with liquid detergent): covers amounts up to 1000 g (dermal); (Use of pastes): covers amounts up to 0.65 g (inhalation); 0.65 g (dermal); (Liquid cleaner, Application): covers amounts up to 400 g (inhalation); 19 g (dermal); (Spray cleaner, Spraying): Inhalation mass generation rate 0.78 g/sec for spray duration 0.41 min; Dermal contact rate 46 mg/min for 0.41 min; (Spray cleaner, Cleaning): covers amounts up to 16.2 g (inhalation); 0.16 g (dermal); (Bathroom cleaning liquid, Application): covers amounts up to 260 g (inhalation); 19 g (dermal); (Bathroom cleaning spray, Spraying): Inhalation mass generation rate 0.39 g/sec for spray duration 1.5 min; Dermal contact rate 46 mg/min for 1.5 min; (Bathroom cleaning): covers amounts up to 30 g (inhalation); 0.3 g (dermal); (Liquid toilet rim cleaner): covers amounts up to 70 g (inhalation).

Frequency and duration of use/exposure:

Duration: Unless otherwise stated, covers exposure up to 240 minutes:

- PC1: (Joint sealant): 45 minutes/event; (Wood parquet glue, Mixing/Loading): 10 minutes/ event; (Wood parquet glue, Application): 300 minutes/event; (Two-component filler, Mixing/ Loading): 5 minutes/event; (Putty spray): 30 minutes/event.

- PC3: (Electrical evaporators): 480 minutes/event.

- PC9a: (General coating; Paint remover): 60 minutes/event; (Brush & roller painting with solvent rich paint; Pneumatic spraying): 180 minutes/event; (Brush & roller painting with water borne paint): 480 minutes/event.

- PC9b: (Wall plaster): covers dermal exposure up to 120 minutes/event. Negligible release to air expected.

- PC18: (Ink and Toners): 132 minutes/event.

- PC23: (Shoe polish spray): 5 minutes/event; (Shoe cream): 20 minutes/event.

- PC28: (Perfumed candles): 180 minutes/event.

- PC31: (Shoe polish spray): 5 minutes/event; (Shoe cream): 20 minutes/event; (Floor polish; Floor sealer): 90 minutes/event.

- PC34: (Loading of washing machines with liquid detergent): 0.75 minutes/event; (Manual washing with liquid detergent; Use of pastes): 10 minutes/event; (Residues on clothing after washing with liquid detergent): Not relevant.

- PC35: (Loading of washing machines with liquid detergent; Liquid cleaner, Mixing/Loading; Bathroom cleaning liquid, Mixing/Loading): 0.75 minutes/event; (Residues on clothing after washing with liquid detergent): Not relevant; (Manual washing with liquid detergent; Use of pastes): 10 minutes/event; (Spray cleaner, Spraying; Spray cleaner, Cleaning): 60 minutes/ event; (Bathroom cleaning liquid, Application; Bathroom cleaning spray, Spraying; Bathroom cleaning spray, Cleaning): 25 minutes/event; (Liquid toilet rim cleaner): 50 minutes/event. Frequency - covers use frequency:

PC1: (Joint sealant; Filler/Putty from tube): up to 0.008 times/day; 3 times/year; (Tube glue; Universal/wood glue): up to 0.14 times/day; 52 times/year; (Construction glue; Two-component filler, Mixing/Loading; Two-component filler, Application): up to 0.005 times/day; 2 times/year; (Spray glue): up to 0.033 times/day; 12 times/year; (Wood parquet glue, Mixing/Loading): up to 0.001 time/day; 0.375 times/year; (Wood parquet glue, Application):

up to 0.0003 times/day; 0.125 times/year; (Putty spray): up to 0.003 times/day; 1 time/year. - PC3: (Spray application (child, post application); Spray application): up to 0.25 times/day; 90 times/year; (Electrical evaporators; Electrical evaporators (child, post application)): up to 0.41 times/day; 150 times/year.

- PC9a: (General coating): up to 0.0009 times/day; 0.33 times/year; (Paint remover; Brush & roller painting with solvent rich paint; Brush & roller painting with water borne paint): up to 0.003 times/day; 1 time/year.(Pneumatic spraying): up to 0.005 times/day; 2 times/year.

- PC9b: (Wall plaster): up to 0.0005 times/day; 0.2 times/year.

- PC18: (Ink and Toners): up to 0.003 times/day; 1 time/year.

- PC23: (Shoe polish spray): up to 0.022 times/day; 8 times/year; (Shoe cream): up to 0.071 time/day; 26 times/year.

PC28 (Perfumed articles; Perfumed candles): up to 0.33 times/day; 120 times/year.
PC31: (Shoe polish spray): up to 0.022 times/day; 8 times/year; (Shoe cream): up to 0.071 time/day; 26 times/year; (Floor polish): up to 0.005 times/day; 2 times/year; (Floor sealer): up to 0.0003 times/day; 0.125 times/year

- PC34: (Loading of washing machines with liquid detergent; Residues on clothing after washing with liquid detergent): up to 1 time/day; 365 times/year; (Manual washing with liquid detergent): up to 0.28 times/day; 104 times/year; (Use of pastes): up to 0.35 times/day; 128 times/year.

- PC35: (Loading of washing machines with liquid detergent; Residues on clothing after washing with liquid detergent; Spray cleaner, Spraying; Spray cleaner, Cleaning; Liquid toilet rim cleaner): up to 1 time/day; 365 times/year; (Manual washing with liquid detergent; Liquid cleaner, Mixing/Loading; Liquid cleaner, Application): up to 0.28 times/day; 104 times/year; (Use of pastes): up to 0.35 times/day; 128 times/year; (Bathroom cleaning spray, Spraying; Bathroom cleaning spray, Cleaning): up to 0.14 times/day; 52 times/year; (Bathroom cleaning liquid, Mixing/Loading; Bathroom cleaning liquid, Application): up to 0.011 times/day; 4 times/year.

Other given operational conditions affecting consumers exposure:

Application temperature: Unless otherwise stated, 20 °C.

- PC28: (Perfumed candles): 70 °C.

Body weight: Unless otherwise stated, 60 kg.

- PC3: (Spray application (child, post application); Electrical evaporators (child, post application)): 8.7 kg.

Inhalation exposure model - Unless otherwise stated, covers use in room size of 20 m3. - PC1: (Joint sealant): room size of 10 m3; (Wood parquet glue, Mixing/Loading; Twocomponent filler, Mixing/Loading): room size of 1 m3; (Wood parquet glue, Application): room size of 58 m3; (Putty spray): room size of 34 m3.

 PC3: (Spray application): room size of 58 m3; (Electrical evaporators): room size of 16 m3; (Spray application (child, post application); Electrical evaporators (child, post application)): Not relevant.

- PC9a: (General coating): room size of 58 m3; (Pneumatic spraying): room size of 34 m3.

- PC9b: (Wall plaster): Not relevant.

- PC23: (Shoe polish spray; Shoe cream): room size of 34 m3.

- PC28: (Perfumed articles; Perfumed candles): room size of 16 m3.

- PC31 (Shoe polish spray; Shoe cream): room size of 34 m3; (Floor polish; Floor sealer): room size of 58 m3.

- PC34: (Loading of washing machines with liquid detergent; Manual washing with liquid detergent; Use of pastes): room size of 1 m3; (Residues on clothing after washing with liquid detergent): Not relevant.

- PC35: (Loading of washing machines with liquid detergent; Manual washing with liquid detergent; Use of pastes; Liquid cleaner, Mixing/Loading; Bathroom cleaning liquid, Mixing/ Loading): room size of 1 m3; (Residues on clothing after washing with liquid detergent): Not relevant; (Liquid cleaner, Application): room size of 58 m3; (Spray cleaner, Spraying; Spray cleaner, Cleaning): room size of 15 m3; (Bathroom cleaning liquid, Application; Bathroom cleaning spray, Spraying; Bathroom cleaning spray, Cleaner): room size of 2.5 m3.

Inhalation exposure model - Release area:

-PC1: (Joint sealant): 0.025 m2; (Tube glue; Filler/Putty from tube): 0.02 m2; (Universal/ wood glue): 0.04 m2; (Construction glue; Wood parquet glue, Application): 1 m2; (Wood parquet glue, Mixing/Loading): 0.032 m2; (Two-component filler, Mixing/Loading): 0.01 m2; (Two-component filler, Application): 0.005 m2.

- PC9a: (General coating); 22 m2; (Paint remover): 2 m2; (Brush & roller painting with solvent rich paint; Brush & roller painting with water borne paint): 10 m2.

- PC18: (Ink and toners): 2 m2.

- PC31: (Floor polish; Floor sealer): 22 m2.

- PC34: (Loading of washing machines with liquid detergent): 0.002 m2

- PC35: (Loading of washing machines with liquid detergent; Liquid cleaner, Mixing/Loading; Bathroom cleaning liquid, Mixing/Loading): 0.002 m2; (Liquid cleaner, Application): 10 m2; (Spray cleaner, Cleaning): 1.7 m2; (Bathroom cleaning liquid, Application): 0.19 m2; (Bathroom cleaning spray, Cleaning): 6.4 m2.

Inhalation rate: Unless otherwise stated, 24.1 m3/day.

DC25: (Liquid toilet rim cleaner): 12.06 m2/dev

-PC35: (Liquid toilet rim cleaner): 12.96 m3/day.

Skin contact area: Unless otherwise stated, covers skin contact area up to 215 cm2. - PC1: (Joint sealant; Tube glue; Universal/wood glue): up to 2 cm2; (Spray glue; Wood parquet glue, Application): up to 430 cm2; (Filler/Putty from tube; Two-component filler, Mixing/Loading; Two-component filler, Application; Putty spray): up to 960 cm2.

- PC3: (Spray application (child, post application); Electrical evaporators (child, post application); up to 5000 cm2; (Spray application); up to 19000 cm2

application)): up to 5000 cm2; (Spray application); up to 19000 cm2.

 PC9a: (General coating): up to 108 cm2; (Paint remover; Brush & roller painting with solvent rich paint; Brush & roller painting with water borne paint; Pneumatic spraying): up to 960 cm2

- PC9b: (Wall plaster): up to 1900 cm2.

- PC18: (Inks and toners): up to 430 cm2.

- PC23: (Shoe polish spray): up to 430 cm2.

- PC31: (Shoe polish spray; Floor polish; Floor sealer): up to 430 cm2.

- PC34: (Manual washing with liquid detergent): up to 1900 cm2; (Residues on clothing after washing with liquid detergent): up to 17000 cm2; (Use of pastes): up to 430 cm2.

- PC35: (Manual washing with liquid detergent; Liquid cleaner, Application): up to 1900 cm2; (Residues on clothing after washing with liquid detergent): up to 17000 cm2; (Use of pastes): up to 430 cm2; (Spray cleaner, Spraying; Bathroom cleaning spray, Spraying): up to 22 cm2.

Conditions and measures related to information and behavioral advice to consumers:	Assessment tool: ConsExpo v4.1 for inhalation and dermal exposure. Deviation from default scenario: Yes - can be one or more of the following: body weight, ventilation rate, airborne fraction of the non-volatile material, weight fraction of the non- volatile material, mass generation rate, area of release increases over time, inhalation rate, application duration, exposed area dermal, room volume, release area, applied amount, average molecular weight of matrix, exposure duration, spray duration.
Conditions and measures related to personal protection and hygiene:	General ventilation: Unless otherwise stated, ventilation rate: 2 air changes/ hour. - PC1: (Tube glue; Universal/wood glue; Spray glue; Filler/Putty from tube; Two-component filler, Mixing/Loading; Two-component filler, Application): ventilation rate: 0.6 air changes/ hour; (Putty spray): ventilation rate: 1.5 air changes/ hour.
	<ul> <li>PC3: (Spray application):ventilation rate: 0.5 air changes/ hour; (Electrical evaporators):</li> <li>ventilation rate: 1 air change/ hour; (Spray application (child, post application); Electrical</li> </ul>
	evaporators (child, post application)): Not relevant.
	- PC9a (General coating): ventilation rate: 3 air changes/ hour; (Paint remover): ventilation rate: 2.5 air changes/ hour
	- PC9b: (Wall plaster): Not relevant.
	- PC18: (Ink and Toners): ventilation rate: 0.6 air changes/ hour.
	<ul> <li>PC23: (Shoe polish spray; Shoe cream): ventilation rate: 1.5 air changes/ hour.</li> <li>PC28: (Perfumed articles; Perfumed candles): ventilation rate: 1 air change/ hour.</li> </ul>
	- PC31: (Shoe polish spray; Shoe cream): ventilation rate: 1.5 air changes/ hour; (Floor
	polish; Floor sealer): ventilation rate: 0.5 air changes/ hour.
	<ul> <li>PC34: (Residues on clothing after washing with liquid detergent): Not relevant.</li> <li>PC35: (Residues on clothing after washing with liquid detergent): Not relevant; (Liquid</li> </ul>
	cleaner, Application): ventilation rate: 0.5 air changes/ hour; (Spray cleaner, Spraying; Spray
	cleaner, Cleaning): ventilation rate: 2.5 air changes/ hour.
2.2 Control of environmental exposure	
Product characteristics:	Physical state: liquid.
	Vapour pressure: 7 Pa at 20 °C
Amounts used:	Daily wide dispersive use: <=0.0022 tons/day.
	Maximum annual use at a site: 4000 tons/year.
Francisco de la constitución de la	Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk	Flow rate of receiving surface water: >=18000 m3/day (default).
management:	
Other given operational conditions affecting	Outdoor use.
environmental exposure:	Release fraction to air from process (initial release): 1.0; (final release): 1.0. Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 2.2 kg/day.
	Release fraction to soil from process (final release): 0.20.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%).
sewage treatment plant:	Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external	Particular considerations on the waste treatment operations: No (low risk) (ERC based
treatment of waste for disposal:	assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external	External recovery and recycling of waste should comply with applicable local and/or nationa
recovery of waste:	regulations.
Additional good practive advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.
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S EXPOSURE ESTIMATION and reference to the source	
<ol><li>Exposure estimation and reference to its source realth</li></ol>	

PC9a (Brush & Roller painting with solvent rich paint); PC9a (Pneumatic spraying); PC28 (Perfumed candles).

Assessment method: ConsExpo v4.1. Only highest figures are presented here.

Exposure estimation:

<u>Route</u>	Exposure estimate	<u>RCR</u>	<u>Notes</u>

		Route	Exposure e	estimate	<u>RCR</u>	<u>Notes</u>
Consumer, short-term, syste	mic	Dermal	16,5 mg/kg	bw/day	0,825	PC9a (Pneumatic spraying)
Consumer, short-term, syste	mic	Inhalation	25,6 mg/m3	3	0,948	PC28 (Perfumed candles)
Consumer, short-term, syste	mic	Combined routes	N/A		0,981	PC9a (Brush & Roller painting with solvent rich paint)
Consumer, long-term, syster	nic	Dermal	2,33 mg/kg	bw/day	0,583	PC3 (Electrical evaporators (child, post application))
Consumer, long-term, syster	nic	Inhalation	3,2 mg/m3		0,593	PC28 (Perfumed candles)
Consumer, long-term, syster	nic	Oral	1,7 mg/kg k	ow/day	0,425	PC3 (Spray application (child, pos application))
Consumer, long-term, syster	nic	Combined routes	N/A		0,938	PC3 (Electrical evaporators (child, post application))
Environment						
Information for contributing sc		(2): ERC8a, ERC8a	t			
Assessment method: EUSES	2.1.2.					
Exposure estimation:						
Compartment		PEC		<u>RCR</u>	<u>Notes</u>	
Freshwater		0,018 mg/L		0,018		
Freshwater sediment		0,091 mg/kg dw		0,017		
Marine water		0,00176 mg/L		0,018		
Marine water sediment		0,0091 mg/kg dw		0,017		
Soil		0,012 mg/kg dw		0,027		
STP		0,139 mg/L		<0,01		
Man via environment		0,0000843 mg/m3 mg/kg bw/day	/ 0,00084	<0,01 / <0,01	Inhalation / Oral	
Man via environment-Combin routes	ned	N/A		<0,01		
RCR=Risk characterization ra	ntio (PE	C/PNEC or Exposu	ire estimate/[	ONEL); PEC=Pre	dicted environmental	concentration.
. Guidance to the Downstrea	am Use	er to evaluate whetl	her he works	inside the bound	daries set by the ES	
Col	ndition	s outlined in Section	2 are impler	mented. Where of	her Risk Managemer	anagement Measures/Operational nt Measures/Operational Conditions ent levels.
nec car	are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastev can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.				ed removal efficiency for wastewate If scaling reveals a condition of	