

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

Revision date: 2020-04-23 Supercedes: 2019-01-09

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

1.1. Product identifier:	
Product trade name: Company product number: REACH registration number: Substance name: Substance identification number: Other means of identification:	Kalama* Benzyl Alcohol NF/FCC BZALCFCC 01-2119492630-38-0021 Benzyl alcohol EC 202-859-9; EC index number: 603-057-00-5 Benzene methanol; Phenylcarbinol; alpha-Hydroxytoluene; Phenylmethanol; (Hydroxymethyl)benzene; alpha-Toluenol
1.2. Relevant identified uses of the substance o	r 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
1.3. Details of the supplier of the safety data sh	eet:
Manufacturer/Supplier:	Emerald Performance Materials, LLC Emerald Kalama Chemical, LLC 1296 NW Third Street Kalama, WA 98625 United States Telephone: +1-360-673-2550
EU Only Representative:	1499 SE Tech Center Place, Suite 300 Vancouver, WA 98683 United States Telephone: +1-360-954-7100 Penman Consulting bvba Avenue des Arts 10 B-1210 Brussels Belgium Telephone: +32 (0) 2 305 0698 email: pcbvba09@penmanconsulting.com
For further information about this SDS:	Email: product.compliance@emeraldmaterials.com
1.4. Emergency telephone number:	

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):



Warning Hazard statements: H302 Harmful if swallowed. H319 Causes serious eye 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

Precautionary 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	99-100	Acute Tox. 4 Inhalation- Acute Tox.	H302-319-332
			4 Oral- Eye Irrit. 2	
CAS-No.	Chemical Name	<u>Weight%</u>	REACH Registration No.	EC/List Number
0000100-51-6	Benzyl alcohol	99-100	01-2119492630-38-0021	202-859-9
See Section 16 for	full toxt of U (Uppord) statements (CC	4070/0000)		

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>	ACGIH - TWA/Ceiling	<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	Ireland OEL 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	Acute (local)	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 @ 20°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:	39 mN/m @ 20°C (1g/L)

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:

Chemical Name

Category

Benzyl alcohol

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):	Ν
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 "X" listing indicates all intentionally added components are either listed or are otherwise compliant with the regul	ation 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, 15

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).
	 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.
	- 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
Additional good prosting advice Obligations	conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
Additional good practice advice. Obligations	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks.
according to Article 37(4) of REACH do not	Minimisation of splashes and spills.
apply:	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.
Amounts used.	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:	Indeer use
Other given operational conditions affecting	Indoor use.
	Industrial use.
environmental exposure:	
environmental exposure:	Release fraction to air from process (initial release): 0.0025; (final release): 0.00125. Local
environmental exposure:	release rate: 87.5 kg/day (SpERC ESVOC 2.2.v1).
environmental exposure:	

releases to soil:	nissions and e D C a re re (((a C 7 F E	nvironmental re bry sludge applic on-site treatmen irborne VOCs a emoval and/or a ecovery - adsor Jpgrade of the s nd/or air filtratio chieve a reduct on-site treatmen 0%). quipment clean	elease). cation to agricultu at of off-air: Typica and particulates be air filtration - partic ption). Upgrade of system in place of an and/or thermal ion of the air emis at of wastewater: A	ral soil: Yes (defaul I measures to main elow respective OE le removal and/or t f the system in place r additional air treat oxidation and/or va ssions.) (Effectivene Acclimated biologica	tain workplace concentrations or LS (e.g. thermal wet scrubber - gas hermal oxidation and/or vapour e or additional air treatment measures ment measures, such as wet scrubber pour recovery systems, in order to
Conditions and measures related			-	it (STP): Yes (Effic	
sewage treatment plant:					2000 m3/day (standard town).
Conditions and measures related treatment of waste for disposal:	a w	ssessment derr vaste life stage.	nonstrating contro Waste disposal a	l of risk with default ccording to nationa	rations: No (low risk) (ERC based conditions. Low risk assumed for I/local legislation is sufficient.)
Conditions and measures related recovery of waste:		xternal recover	y and recycling of	waste should com	ply with applicable local and/or national
Additional good practice advice. according to Article 37(4) of REA apply:	Obligations A CH do not	-	nent measures uti	lised must also con	nply with all relevant local regulations.
3. Exposure estimation and refere	ence to its source				
Health					
Information for contributing scenar					
Assessment method: CHESAR V2	2.2 Worker TRA v3.	Only highest fi	gures are present	ted here.	
Exposure estimation:					
Worker, long-term, systemic	<u>Route</u> Dermal	Exposure e 1,371 mg/k		<u>RCR</u> 0,171	<u>Notes</u> PROC2, PROC5, PROC8a,
					PROC8b, PROC13
Worker, long-term, systemic	Inhalation	13,52 mg/n	n3	0,614	PROC3
	Inhalation Combined route		n3	0,614 0,701	PROC3 PROC3
Worker, long-term, systemic					
Worker, long-term, systemic Worker, long-term, systemic	Combined route	s N/A	g bw/day	0,701	PROC3 PROC2, PROC5, PROC8a,
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic	Combined route Dermal	s N/A 1,371 mg/k 54,07 mg/n	g bw/day	0,701 0,034	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment	Combined route Dermal Inhalation Combined route	s N/A 1,371 mg/k 54,07 mg/n s N/A	n3	0,701 0,034 0,492	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation:	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEf 2.	s N/A 1,371 mg/k 54,07 mg/n s N/A	n3 .v1)	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1.	Combined route Dermal Inhalation Combined route	s N/A 1,371 mg/k 54,07 mg/n s N/A	n3	0,701 0,034 0,492	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation:	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEf 2.	s N/A 1,371 mg/k 54,07 mg/n s N/A	n3 .v1)	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEF 2. PEC	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2.	ig bw/day n3 .v1) <u>RCR</u>	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment Freshwater Freshwater sediment Marine water	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEf 2. <u>PEC</u> 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2.	n3 .v1) RCR 0,667	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment Freshwater Freshwater sediment	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEF 2. PEC 0,667 mg/L 3,449 mg/kg dw	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2.	n3 .v1) RCR 0,667 0,654	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment Freshwater Freshwater sediment Marine water	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEf 2. <u>PEC</u> 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2	rg bw/day n3 .v1) RCR 0,667 0,654 0,667	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment Freshwater Freshwater Freshwater sediment Marine water Marine water sediment	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEf 2. PEC 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L 0,345 mg/kg dw	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2	rg bw/day n3 .v1) RCR 0,667 0,654 0,667 0,654	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 PROC3
Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenar Assessment method: EUSES 2.1. Exposure estimation: Compartment Freshwater Freshwater sediment Marine water sediment Soil	Combined route Dermal Inhalation Combined route rio (2): ERC2 (SpEF 2. PEC 0,667 mg/L 3,449 mg/kg dw 0,067 mg/L 0,345 mg/kg dw 0,223 mg/kg dw	s N/A 1,371 mg/k 54,07 mg/n s N/A RC ESVOC 2.2.	g bw/day n3 .v1) RCR 0,667 0,654 0,667 0,654 0,654 0,49	0,701 0,034 0,492 0,509	PROC3 PROC2, PROC5, PROC8a, PROC8b, PROC13 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. 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	(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).

2.1 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 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:
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 dispersion from source towards the worker:	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.
	- 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.
	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 management:	Flow rate of receiving surface 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).
reduce or limit discharges, air emissions and 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 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
a calmont of waste for dispusal.	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:	
appy. 3. Exposure estimation and reference to its sour	~~~~
D. EXDOSUTE ESUMBLION AND RETERENCE TO ITS SOUL	
Health	

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	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
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 sc	enario (2): ERC3			
Assessment method: EUSES	2.1.2.			
Exposure estimation:				
Compartment	PEC	RCR	<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	037 mg/kg <0,01 / <0,01	Inhalation / Or	al
Man via environment-Combin routes	ned N/A	0,016		
RCR=Risk characterization ra	tio (PEC/PNEC or Expos	sure estimate/DNEL); PEC=P	redicted environme	ntal concentration.
. Guidance to the Downstrea	m User to evaluate whe	ther he works inside the bou	undaries set by the	ES
Health: Pre Coi are req PR PR haz	dicted exposures are not nditions outlined in Section adopted, then users sho uired. Duration of activity mical resistant gloves (te DC1, PROC2, PROC3: N DC8b: Yes (95% effective ard substance which cau	expected to exceed the DN(on 2 are implemented. Where uld ensure that risks are mar y: <=8 hours/day. PROC4, Pf ested to EN 374) in combinati Not required. PROC4, PROC5 eness). Personal protective uses serious eye irritation: Ch	M)EL when the Ris other Risk Manage naged to at least equ ROC5, PROC8a, Pf on with basic emplo 5, PROC8a, PROC equipment (PPE) th nemical goggles. Co	k Management Measures/Operational ment Measures/Operational Conditions uivalent levels. Indoor use, no respirator ROC8b, PROC9, PROC13: Wear oyee training. Local exhaust ventilation: 9, PROC13: Yes (90% effectiveness). at has to be applied when using a low oncentration of substance: Up to 100%.
nec	essary to define appropri	iate site-specific risk manage	ement measures. Re	cable to all sites; thus, scaling may be equired removal efficiency for wastewate tion. If scaling reveals a condition of

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
	- 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:
	- 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:	- 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: 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.

	 PROC3: Closed batch process with occasional controlled exposure. PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure. PROC5, PROC8a, PROC13, PROC19: No. Local exhaust ventilation: PROC1, PROC2, PROC19: Not required. PROC3, PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (80% effectiveness). PROC8b: Yes (90% effectiveness). Occupational Health and Safety Management System: Basic.
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 source)
Health	-
Information for contributing scenario (1): PROC2_P	

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.

Exposure estimation:

		<u>Route</u>	Exposure (<u>estimate</u>	RCR	<u>Notes</u>
Worker, long-term, syste	emic	Dermal	2,82 mg/kg) bw/day	0,353	PROC19
Worker, long-term, syste	emic	Inhalation	13,52 mg/r	n3	0,614	PROC2, PROC8a
Worker, long-term, syste	emic	Combined routes	N/A		0,957	PROC8a
Worker, acute, systemic	;	Dermal	2,82 mg/kg	j bw/day	0,07	PROC19
Worker, acute, systemic	;	Inhalation	90,2 mg/m	3	0,82	PROC19
Worker, acute, systemic	;	Combined routes	N/A		0,891	PROC19
Environment						
Information for contributir	ng scenario	o (2): ERC2				
Assessment method: EU	SES 2.1.2					
Exposure estimation:						
Compartment		PEC		<u>RCR</u>	<u>Notes</u>	
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	
Man via environment-Co routes	ombined	N/A		<0,01		
RCR=Risk characterization 1. Guidance to the Down				-		
	are adop required. PROC2, PROC9, 10 (minir PROC4, Personal eye irritat	ted, then users shou Duration of activity: PROC8a: <=4 hours PROC13: Yes (cher num efficiency derma PROC5, PROC8a, F	Id ensure that PROC1, PROC Nically PROC Nically resists al: 90%). Lo PROC9, PRO Nt (PPE) that es. Concent	at risks are manag ROC3, PROC4, P 19: 15 minutes - ant gloves conforn cal exhaust ventil DC13: Yes (80% has to be applied tration of substand	ged to at least equiva ROC5, PROC8b, PR I hour/day. PROC2, ming) (Effectiveness ation: PROC1, PRO effectiveness). PRO I when using a low has ce: PROC1, PROC2,	nt Measures/Operational Conditions alent levels. Indoor use, no respirator 20C9, PROC13: <=8 hours/day. PROC4, PROC5, PROC8a, PROC8t Dermal: 80%). PROC19: Gloves APF C2, PROC19: Not required. PROC3, C8b: Yes (90% effectiveness). azard substance which causes seriou PROC3, PROC4, PROC5, PROC8a
Environment:	Guidance necessar can be a	e is based on assum ry to define appropria chieved using onsite	ed operating ate site-speci /offsite techr	conditions which fic risk managem lologies, either ald	may not be applicab ent measures. Requi one or in combination	le to all sites; thus, scaling may be ired removal efficiency for wastewate n. If scaling reveals a condition of assessment is required.
Exposure scenario (4): 1. Exposure scenario (4)		dustrial sites - Inte	ermediates			
Short title of the exposure		:				
Use at industrial sites - I						
obe at moustrial Sites - I						
List of use descriptors:						
List of use descriptors: Sector of use category (,	SU9				
List of use descriptors: Sector of use category (Product category (PC): I	PC19			2000		
List of use descriptors: Sector of use category (Product category (PC): I Process category (PRO	PC19 C): PROC	1, PROC2, PROC3,	PROC8b, PI	ROC9.		
List of use descriptors: Sector of use category (Product category (PC): I Process category (PRO Environmental release c	PC19 C): PROC ategory (E	1, PROC2, PROC3, RC): ERC6a				
List of use descriptors: Sector of use category (Product category (PC): I Process category (PRO Environmental release c List of names of contribu	PC19 C): PROC ategory (E ting worke	1, PROC2, PROC3, iRC): ERC6a er scenarios and cor	responding l	PROCs:		h equivalent containment conditions
List of use descriptors: Sector of use category (Product category (PC): I Process category (PRO Environmental release c List of names of contribu PROC1 Chemical produ	PC19 C): PROC ategory (E ting worke	1, PROC2, PROC3, RC): ERC6a r scenarios and cor finery in closed proce	responding I ess without li	PROCs: kelihood of expos		h equivalent containment conditions. e or processes with equivalent

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).

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 correct 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.
	Vapour pressure at elevated temperature:<381 Pa.
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, PROC9: 480 cm2 (two hands, face side only).
	- PROC8b: 960 cm2 (two hands).
Other given operational conditions affecting	Location: Indoor use.
workers exposure:	Domain: Industrial use.
	Process temperature (for liquid):
	- PROC1, PROC2, PROC3: <=180°C.
	- PROC8b, PROC9:<= 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.
	- 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.
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%).
	- PROC8b, PROC9: 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:		ximum daily u		-	
			use at a site: 100	•	
		-		ional scale: 10 %.	
Frequency and duration of use:		-	00 days/year.		· (- - f- · · 4)
Environmental factors not influence management:	-	w rate of rece	iving surface wate	er: >=18,000 m3/day	(detault).
Other given operational conditions environmental exposure:	Re rate Re Loc	e: 250 kg/day. ease fraction al release rate	to wastewater fro e: 100 kg/day.		05; (final release): 0.05. Local release lease): 0.02; (final release): 0.02.
Technical onsite conditions and m			•	ral soil: Yes (default)	
reduce or limit discharges, air emi releases to soil:	•				
Conditions and measures related sewage treatment plant:	•			t (STP): Yes (Efficie treatment plant: >=2	ency=87.36%). 000 m3/day (standard town).
Conditions and measures related				•	ations: No (low risk) (ERC based
treatment of waste for disposal:			-		conditions. Low risk assumed for
<u> </u>		-	-	-	(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		ulations. risk manager	ent measures util	lised must also com	ply with all relevant local regulations.
according to Article 37(4) of REAC apply:	-	nsk managen	ient measures uti		
D. EXDOSULE ESUMATION AND LETERS	nce to its source				
3. Exposure estimation and referent Health Information for contributing scenari		C3, PROC8b			
Health Information for contributing scenari	o (1): PROC2, PRO		gures are present	ed here.	
Health	o (1): PROC2, PRO		gures are present	ed here.	
Health Information for contributing scenari Assessment method: CHESAR V2	o (1): PROC2, PRO			ed here.	Notes
Health Information for contributing scenari Assessment method: CHESAR V2	o (1): PROC2, PRO .2 Worker TRA v3. (Dnly highest fig	estimate		Notes PROC2, PROC8b
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation:	o (1): PROC2, PRO .2 Worker TRA v3. (<u>Route</u>	Dnly highest fig Exposure e	e <mark>stimate</mark> g bw/day	RCR	
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic	o (1): PROC2, PRO .2 Worker TRA v3. (<u>Route</u> Dermal	Dnly highest fig <u>Exposure e</u> 1,371 mg/kg	e <mark>stimate</mark> g bw/day	<u>RCR</u> 0,171	PROC2, PROC8b
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic	o (1): PROC2, PRO .2 Worker TRA v3. C <u>Route</u> Dermal Inhalation	Only highest fig Exposure e 1,371 mg/ki 13,52 mg/m	g bw/day	RCR 0,171 0,614	PROC2, PROC8b PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes	Dnly highest fig Exposure e 1,371 mg/k 13,52 mg/m N/A	g bw/day g bw/day g bw/day	RCR 0,171 0,614 0,701	PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal	Dnly highest fig <u>Exposure e</u> 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg	g bw/day g bw/day g bw/day	RCR 0,171 0,614 0,701 0,034	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	g bw/day g bw/day g bw/day	RCR 0,171 0,614 0,701 0,034 0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	g bw/day g bw/day g bw/day	RCR 0,171 0,614 0,701 0,034 0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	g bw/day g bw/day g bw/day	RCR 0,171 0,614 0,701 0,034 0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation:	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	g bw/day 13 g bw/day 13	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment	o (1): PROC2, PRO 2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a 2. PEC	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	estimate g bw/day n3 g bw/day n3 RCR	RCR 0,171 0,614 0,701 0,034 0,492	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation:	o (1): PROC2, PRO 2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a 2. PEC 0,636 mg/L	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	estimate g bw/day n3 g bw/day n3 B B CR 0,636	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a 2. PEC 0,636 mg/L 3,285 mg/kg dw	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	estimate g bw/day 13 g bw/day 13 g bw/day 13 g bw/day 13 0 bw/day 13 0,036 0,623	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment Information for contributing scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater	o (1): PROC2, PRO 2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a 2. PEC 0,636 mg/L	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	estimate g bw/day n3 g bw/day n3 B B CR 0,636	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater Streshwater Streshwater Marine water	o (1): PROC2, PRO 2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (2): ERC6a 2. PEC 0,636 mg/L 3,285 mg/kg dw 0,064 mg/L 0,329 mg/kg dw	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	estimate g bw/day 13 g bw/day 13 g bw/day 13 g bw/day 13 0,636 0,636 0,636	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment Marine water Soil	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (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	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m	Estimate g bw/day n3 g bw/day n	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater Freshwater Soil STP	o (1): PROC2, PRO 2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (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 6,318 mg/L	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m N/A	Estimate g bw/day 13 0,636 0,636 0,636 0,636 0,623 0,468 0,162	RCR 0,171 0,614 0,701 0,034 0,492 0,509	PROC2, PROC8b PROC3 PROC3 PROC2, PROC8b PROC3 PROC3
Health Information for contributing scenari Assessment method: CHESAR V2 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 scenari Assessment method: EUSES 2.1.2 Exposure estimation: Compartment Freshwater Freshwater sediment Marine water sediment Soil	o (1): PROC2, PRO .2 Worker TRA v3. (Route Dermal Inhalation Combined routes Dermal Inhalation Combined routes o (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	Dnly highest fig Exposure e 1,371 mg/kg 13,52 mg/m N/A 1,371 mg/kg 54,07 mg/m N/A	Estimate g bw/day n3 g bw/day n	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/.

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).

Process temperature (to figuel) <= 40 °C.	Other given operational conditions affecting workers exposure:	Location: Indoor use. Domain: Industrial use.	<= 10 °C	
PROCEB, PROC: Semi-dosed process with occasional controlled exposure. PROCS, PROC: PROC13, PROC14; No. Local exhaust ventilation: PROCS, PROC36, PROC213, PROC13, PROC14; Yes (30% effectiveness), Occupational Health and Safety Management System: Advanced. Conditions and measures related to personal protection, hygisme and health evaluation: PROC3, PROC36, PROC36, PROC30, PROC13, PROC13, PROC14; Yes (30% effectiveness), Concupational Health and Safety Management System: Advanced. Conditions and measures related to personal protection, hygisme and health evaluation: PROC3, PROC36,	Technical conditions and measures to control			r changes per hour): 0%.
Local exhaust ventilation: PROCSB, PROCB, PROC10, PROC13, PROC13, PROC14: Yes (96% effectiveness), PROCSB, Ves (95% effectiveness), Occupational Health and Safety Management System: Advanced. Conditions and measures related to personal Protection, hygiene and health evaluation: PROC14: No (Effectiveness Dermal: 0%), PROC3, PROC2B, PROC3D, 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: Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff or good practice. 22 Control of environmental exposure Product characteristics: Physical state: louid. Vapour pressure: 7 Pa at 20 *C Arounts used: Maximum aniau use at a site: 130 tonday. Maximum aniau use at a site: 300 tons/year. Percentage of tonnage used at regional scene: 10 %. Precentage of tonnage used at regional scene: 10 %. Release fraction to air form process (initial relea	dispersion from source towards the worker:	- PROC8b, PROC9: Semi-close		
- PROCE: Yes (95% effectiveness) Occupational Health and Safety Management System: Advanced. Conditions and measures related to personal protection, hygiene and health evaluation: PROCI (NCC4), PROC9, PROC10, PROC10, 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: Article 37(4			,	
Occupational Health and Safely Management System: Advanced. Conditions and measures related to personal protection, hygiene and health evaluation: Respiratory protection: Not required. Chemical safety gogles. Dermal protection: Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: Cenerally accepted standards of occupational hygiene are maintained. 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. 2.2 Control of environmental exposure Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Amounts used: Maximum dialy use at a site: 1306 toniday. Maximum annual use at a site: 300 toniday. Maximum annual use at a site: 300 toniday. Maximum annual use at a site: 300 m3/day (default). Prequency and duration of use: Environmental exposure Emission days: 220 days/year. Proving a staff core not influenced by fisk management: Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.0 (final release):				ROC14: Yes (90% effectiveness).
Conditions and measures related to personal protection, hygiane and health evaluation: Respiratory protection: Not required. Chemical safety goggles. Dermal protection: - PROCI, PROCGA, PROCC10, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 0%, Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: Generally accepted standards of occupational hygine are maintained. Minimisation of manual phases/work tasks. Notiance 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 OCs followed. 2.2 Control of environmental exposure Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Product characteristics: Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Amounts used: Maximum daily use at a site: 1.36 ton/day. Maximum annual use at a site: 300 tons/year. Percentage of tomage used at regional scale: 10 %. Frequency and duration of use: Emission days: 220 days/year. Frequency and duration of use: Environmental factors not influenced by risk. Release fraction to air from process (initial release): 0.0 (ginal release): 0.0.1 (ginal rele				m: Advanced.
Dermal protection: - PROC14: NO (Effectiveness Dermal: 0%). - PROC5, PROC6a, PROC6b, PROC9, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90% Additional good practice advice. Obligations Generally accepted standards of accupational hygiene are maintained. according to Article 37(4) of REACH do not apply: Generally accepted standards of accupational hygiene are maintained. Minimisation of splashes and splits. Avidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Mamagement/Supervision in place to check that RMMs in place are being used correctly. OCs followed. 2.2 Control of environmental exposure Physical state: liquid. Yapour pressure: 7 Pa at 20 °C Maximum annual use at a site: 300 tons/year. Percentage of tonnage used at regional scale: 10 %. 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: Release fraction to air from process (initial release): 0.0 (final release): 0.0.1 (final release): 0.0.	Conditions and measures related to personal			
- PROC14: No (Effectiveness Dermat: 0%). - PROC34, PROC30, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermat: 90% Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: Additional good practice advice. Obligations apply: Advice advice of contact with contaminated tools and objects. Regular clearing of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly OCs followed. Z 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: 1.38 ton/day. Maximum daily use at a site: 1.30 ton/day. Maximum daily use at a site: 3.00 tons/year. Percentage of tonnage used at regional scale: 10 %. Frequency and duration of use: Environmental factors not influenced by risk management: Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.0 (final release): 0.0.10 (final release)	protection, hygiene and health evaluation:			
- PROC6, PROC6, PROC6, PROC6, 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 splashes and splils. 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 OCs followed. 2.2 Control of environmental exposure Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Maximum daily use at a site: 1.36 ton/day. Maximum anual use at a site: 300 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: Release fraction to air from process (initial release): 0.985. (final release): 0.0, (f		•		
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 splils. 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. OCs followed. 2.2 Control of environmental exposure Physical state: liquid. Vapour pressure: 7 Pa at 20 °C Amounts used: Maximum daily use at a site: 30 fon/day. Maximum annual use at a site: 30 fon/day. Maximum annual use at a site: 300 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: Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.985; (final release): 0.985, Local release rate: 1340 kg/day (SpERC EFCC 4). Release fraction to wastewater from process (final release): 0.0.1 (final		- PROC5, PROC8a, PROC8b, F	PROC9, PROC10, P	
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Vapour pressure: 7 Pa at 20 °C Amounts used: Maximum daily use at a site: 1.36 ton/day. Maximum annual use at a site: 1.36 ton/day. 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: >=18,000 m3/day (default). Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.985; (final release): 0.985; (final release): 0.0; (final release): 0.0; (final release): 0.0; (final release): 0.0.1 Lor release rate: 0 Kg/day (SpERC EFCC 4). Release fraction to asil from process (final release): 0.0; (final release): 0.0.1 Lor release rate: 0 kg/day (SpERC EFCC 4). Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soll: Municipal Sewage Treatment Plant (STP): Yes (default). Conditions and measures related to external release fraction to agricultural soil: Yes (default). Municipal Sewage System/treatment plant: >=2000 m3/day (standard town). Conditions and measures related to external recovery of waste: 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 and recycling of waste should comply with ap	2.2 Control of environmental exposure			
Amounts used: Maximum daily use at a site: 1.36 ton/day. Maximum annual use at a site: 300 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: >=18,000 m3/day (default). Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.985; (final release): 0.985. Local release rate: 0.94/day (SpERC EFCC 4). Release fraction to wastewater from process (initial release): 0.0; (final release): 0.0. Lo release rate: 0.0 (gr/day (SpERC EFCC 4). Release fraction to soil from process (initial release): 0.0 (SpERC EFCC 4). Release fraction to soil from process (initial release): 0.0 (SpERC EFCC 4). Release to soil: 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 recovery of waste for disposal: regulations. External recovery and recycling of waste should comply with applicable local and/or na regulations. Conditional 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 regulation according to Article 37(4) of REACH do not apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Expo	Product characteristics:			
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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: >=18,000 m3/day (default). Other given operational conditions affecting environmental exposure: Release fraction to air from process (initial release): 0.985; (final release): 0.985, Local release rate: 1340 Kg/day (SpERC EFCC 4). Release fraction to wastewater from process (finitial release): 0.0; (final release): 0.0, CpERC EFCC 4). Release fraction to soil from process (finitial release): 0.0; (final release): 0.0, Loc release rate: 0 Kg/day (SpERC EFCC 4). 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 (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: External recovery and recycling of waste should comply with applicable local and/or na 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 regulation sufficient.) Steposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 <t< td=""><td>Amounts used:</td><td colspan="3"></td></t<>	Amounts used:			
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Release fraction to wastewater from process (initial release): 0.0; (final release): 0.0. Lot release rate: 0 kg/day (SpERC EFCC 4). 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). Particular considerations on the waste treatment of waste for disposal: External recovery on the waste disposal according to national/local legislation is sufficient.) Conditions and measures related to external treatment of waste: External recovery and recycling of waste should comply with applicable local and/or na 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 regulation sufficient.) Release fraction for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Reck Notes Result Exposure estimation Exposure estimate Reck Notes	Other given operational conditions affecting	Release fraction to air from proc	ess (initial release):	0.985; (final release): 0.985. Local
release rate: 0 kg/day (SpERC EFCC 4). Release fraction to soil from process (final release): 0.0 (SpERC EFCC 4).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 freatment 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: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 na 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 regulation according to ChESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation:NotesRouteExposure estimateRCRNotes	environmental exposure:			
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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 treatment plant: 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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate RCR				0.0 (SpERC EECC 4)
reduce or limit discharges, air emissions and releases to soil: Conditions and measures related to 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 treatment of waste External recovery and recycling of waste should comply with applicable local and/or na regulations. Conditions and measures related to external recovery and recycling of waste should comply with all relevant local regulation according to Article 37(4) of REACH do not apply: All risk management measures utilised must also comply with all relevant local regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Exposure estimate RCR	Technical onsite conditions and measures to	-		
Conditions and measures related to 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 recovery of waste: External recovery and recycling of waste should comply with applicable local and/or na 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 regulation for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate RCR	reduce or limit discharges, air emissions and		, , , , , , , , , , , , , , , , , , ,	,
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 recovery of waste: External recovery and recycling of waste should comply with applicable local and/or na 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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate		Municipal Sewage Treatment Pl	ant (STP): Yes (Effi	ciency=87.36%).
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 recovery of waste: External recovery and recycling of waste should comply with applicable local and/or na 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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route RCR Notes				
waste life stage. Waste disposal according to national/local legislation is sufficient.) Conditions and measures related to external recovery and recycling of waste should comply with applicable local and/or naregulations. 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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate				. , .
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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route RCR Notes		waste life stage. Waste disposal	according to nation	al/local legislation is sufficient.)
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 regulation apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Route			of waste should con	nply with applicable local and/or national
according to Article 37(4) of REACH do not apply: 3. Exposure estimation and reference to its source Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: <u>Route Exposure estimate RCR Notes</u>	-	•	Itilised must also co	mnly with all relevant local regulations
Health Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate RCR Notes	according to Article 37(4) of REACH do not	All fisk management measures		
Information for contributing scenario (1): PROC8a, PROC10, PROC13, PROC14 Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route RCR Notes	3. Exposure estimation and reference to its sour	ce		
Assessment method: CHESAR V2.2 Worker TRA v3. Only highest figures are presented here. Exposure estimation: Route Exposure estimate RCR Notes	Health			
Exposure estimation: Route Exposure estimate RCR Notes	Information for contributing scenario (1): PROC8a	a, PROC10, PROC13, PROC14		
Route Exposure estimate RCR Notes	Assessment method: CHESAR V2.2 Worker TRA	v3. Only highest figures are prese	ented here.	
· ·	•			
Worker, long-term, systemic Dermal 3,43 mg/kg bw/day 0,429 PROC14	Route	•	<u>RCR</u>	
	Worker, long-term, systemic Dermal	3,43 mg/kg bw/day	0,429	PROC14

	<u>Route</u>	Exposure estimate	<u>RCR</u>	<u>Notes</u>
Worker, long-term, syster	nic Inhalation	4,506 mg/m3	0,205	PROC8a, PROC10, PROC13
Worker, long-term, syster	mic Combined route	s 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 route	s N/A	0,232	PROC10
Environment				
	scenario (2): ERC4 (SpEF	RC: EFCC 4)		
Assessment method: EUS		·		
Exposure estimation:				
Compartment	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	0,00037 mg/kg c			
		*		
Soil	0,043 mg/kg dw	0,095		
STP	0 mg/L	0		
Man via environment	0,225 mg/m3 / 0	,237 mg/kg 0,042 / 0,05	9 Inhalation / Or	ral
Manada and Anna Anna Anna Anna Anna Anna	bw/day	0.404		
Man via environment-Cor routes	nbined N/A	0,101		
	n ratio (DEC/DNEC or Even	ouro actimata/DNEL): DEC-	Dradiated anyiranma	untal concentration
		sure estimate/DNEL); PEC= ether he works inside the bo		
				k Management Measures/Operational
	Conditions outlined in Sect	on 2 are implemented. When	e other Risk Manage	ement Measures/Operational Conditions
	are adopted, then users sh	ould ensure that risks are ma	anaged to at least eq	uivalent levels. Indoor use, no respirator
	required. Duration of activi	ty: <=8 hours/day. PROC5, F	PROC8a, PROC8b, F	PROC9, PROC10, PROC13: Wear
	chemical resistant gloves (ested to EN 374) in combination	tion with basic emplo	oyee training. Local exhaust ventilation:
	PROC5, PROC8a, PROC9	, PROC10, PROC13, PROC	14: Yes (90% effecti	veness). PROC8b: Yes (95%
	effectiveness). Personal p	rotective equipment (PPE) th	at has to be applied	when using a low hazard substance whic
		n: Chemical goggles. Conce		-
Environment:	Guidance is based on assu	med operating conditions wh	nich may not be appli	cable to all sites; thus, scaling may be
	necessary to define approp	riate site-specific risk manag	ement measures. Re	equired removal efficiency for wastewate
	can be achieved using ons	te/offsite technologies, eithe	r alone or in combina	tion. If scaling reveals a condition of
	unsafe use (i.e., RCRs > 1)	, additional RMMs or a site-s	specific chemical safe	ety assessment is required.
Exposure scenario (6): L	Jse at industrial sites - A	dhesives and sealants, c	oatings and paints	, thinners, paint removers, fillers,
putties, plasters, modelli	ng clay, metal and non-i	netal surface treatment p	roducts, ink and to	oners
1. Exposure scenario (6)				
Short title of the exposure	scenario:			
		• • •	int removers, fillers,	putties, plasters, modelling clay, metal ar
	ent products, ink and toners			
List of use descriptors:				
Sector of use category (S		N15 DC19		
	C1, PC9a, PC9b, PC14, PC			C13, PROC14, PROC23, PROC24,
PROC25.			510, FROC12, FRO	C 13, FROC 14, FROC 23, FROC 24,
	tegory (ERC): ERC4 (SpEF	RC: ESVOC 5)		
	ng worker scenarios and c	· · ·		
			l or liquid materials ir	n the context of manufacturing or
formulating sectors, as we	ell as upon end use.			
		s i.e. dispersion into air (= ato	omization) by e.g. pre	essurized air, hydraulic pressure or
centrifugation, applicable	for liquide and nowdere			
				sfer includes loading, filling, dumping,

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.

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/.

2.1 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:	 General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment: PROC8b, PROC9, PROC12: Semi-closed process with occasional controlled exposure. PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC23, PROC24, PROC25: No. Local exhaust ventilation: PROC12, PROC23, PROC24, PROC25: Not required. PROC5, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC7, PROC8b: Yes (95% effectiveness).
	Occupational Health and Safety Management System: Advanced.
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	CCS IOIIOWEd.
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:	Emission days: 300 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. 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	Release fraction to soil from process (final release): 0.0 (SpERC ESVOC 5). Dry sludge application to agricultural soil: Yes (default).
releases to soil: 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 relate reatment of waste for disposal:	ass	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 ecovery of waste:		External recovery and recycling of waste should comply with applicable local and/or national regulations.				
Additional good practice advice. according to Article 37(4) of RE/ apply:	-	All risk management measures utilised must also comply with all relevant local regulations.				
. Exposure estimation and refer	ence to its source					
lealth						
nformation for contributing scena						
	CHESAR v2.2 Worker	TRA v3. PROC7:	ECETOC TR	A Worker v3. Only I	nighest figures are presented here.	
Exposure estimation:	Route	Exposure estim	ato	RCR	Notes	
Worker, long-term, systemic	Dermal	3,43 mg/kg bw/		0,429	PROC14	
Worker, long-term, systemic	Inhalation	13,5 mg/m3	Jay	0,614	PROC7	
Worker, long-term, systemic	Combined routes	N/A		0,014	PROC7	
Worker, acute, systemic	Dermal	3,43 mg/kg bw/	dav	0,086	PROC14	
Worker, acute, systemic	Inhalation	54,06 mg/m3	Jay	0,492	PROC7	
Worker, acute, systemic	Combined routes	N/A		0,492	PROC7	
invironment	Combined routes	IN/A		0,524	FROCI	
<u>Compartment</u> Freshwater	<u>PEC</u> 0,162 mg/L	RC 0, <i>1</i>	2 <u>R</u> 162	<u>Notes</u>		
Freshwater	0,162 mg/L	0,1	62			
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)41			
Man via environment	0,028 mg/m3 / 0,0 bw/day)34 mg/kg <0	,01 / <0,01	Inhalation / Oral		
Man via environment-Combined routes	I N/A	0,0)14			
RCR=Risk characterization ratio	(PEC/PNEC or Exposi	ure estimate/DNEI	.); PEC=Predi	icted environmental	concentration.	
. Guidance to the Downstream	User to evaluate whet	ther he works insi	de the bounda	aries set by the ES		
Condit are ad	ions outlined in Section opted, then users shou	n 2 are implemente uld ensure that risk :: PROC5, PROC8	ed. Where oth s are manage 3a, PROC8b, I	er Risk Managemer ed to at least equiva	anagement Measures/Operational ht Measures/Operational Conditions lent levels. Indoor use, no respirator PROC12, PROC13, PROC14: <=8 PROC212, PROC214, P	

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, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=8 hours/day; PROC7, PROC23, PROC24, PROC25: >4 hours/day. PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. PROC7: Gloves APF 20 (minimum efficiency dermal: 95%). Local exhaust ventilation: PROC12, PROC23, PROC24,
	 PROC25: Not required. PROC5, PROC8a, PROC9, 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, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: Up to 100%. PROC23, PROC24, PROC25: >25%. PROC7: <=60%. Physical state: liquid (PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC13, PROC14; NROC14; NROC24, PROC25; >25%. PROC7; <=60%. Physical state: liquid (PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC13, PROC14; NROC14; NROC
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.

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	
List of names of contributing worker scenarios a	nd corresponding PROCs:
-	netic energy conditions. Use of lubricant or greasing agents in high kinetic energy conditions,
including manual application.	
Name of contributing environmental scenario an	d corresponding ERCs:
ERC7 Use of functional fluid at industrial site.	
	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	Percend protective equipment (PPE) that has to be applied when using a low bezord
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
B	- 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 management:	Exposed skin surface: 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: No.
dispersion non source towards the worker.	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.
protocilon, mygione and nearth evaluation.	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.
- 1. day	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 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: 20 days/year.
• •	

Environmental factors not influenc management:	•			er: >=18,000 m3/da	,
Other given operational conditions environmental exposure:	Re rate Re 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- releases to soil:	easures to Dry			al soil: Yes (defaul	
Conditions and measures related	to municipal Mu	nicipal Sewage	e Treatment Plan	t (STP): Yes (Effic	iency=87.36%).
sewage treatment plant:					2000 m3/day (standard town).
Conditions and measures related treatment of waste for disposal:	ass	essment dem	onstrating control	of risk with default	rations: No (low risk) (ERC based conditions. Low risk assumed for I/local legislation is sufficient.)
Conditions and measures related			and recycling of	waste should com	ply with applicable local and/or nationa
recovery of waste:	-	ulations.			
Additional good practice advice. O according to Article 37(4) of REAC apply:	-	risk managem	ent measures util	lised must also con	nply with all relevant local regulations.
3. Exposure estimation and referer	nce to its source				
Health					
Information for contributing scenario	o (1): PROC18				
Assessment method: CHESAR V2.	2 Worker TRA v3.				
Exposure estimation:					
	<u>Route</u>	Exposure e	<u>stimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,371 mg/kg	g bw/day	0,171	
Worker, long-term, systemic	Inhalation	9,011 mg/m	3	0,41	
Worker, long-term, systemic	Combined routes	N/A		0,581	
Worker, acute, systemic	Dermal	1,371 mg/k@	g bw/day	0,034	
Worker, acute, systemic	Inhalation	36,05 mg/m	3	0,328	
Worker, acute, systemic	Combined routes	N/A		0,362	
Environment					
Information for contributing scenario 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	/ 0,00384 mg/	<0,01 / <0,01	Inhalation / Oral	
Man via environment-Combined	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).

e applied when using a low hazard emical goggles. General RMMs/OCs that ance are as follows:			
0.00			
ance are as follows:			
d objects			
he RMMs in place are being used correctly			
Concentration of substance:			
PROC14: Up to 100%.			
PROC14: <=8 hours/day.			
ds, face side only).			
ts).			

Other given operational conditions affecting workers exposure:	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.
Technical conditions and measures to control dispersion from source towards the worker:	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment: - PROC8b: Semi-closed process with occasional controlled exposure. - PROC5, PROC6, PROC7, PROC10, PROC13, PROC14: No.
	Local exhaust ventilation: - PROC5, PROC6, PROC10, PROC13, PROC14: Yes (90% effectiveness). - PROC7, PROC8b: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
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 and 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.)

SDS Name: Kalama* Benzyl Alco	hol NF/FCC					
Conditions and measures related to external		External recovery and recycling of waste should comply with applicable local and/or national				
recovery of waste: Additional good practice advice. Obligations		lations.				
		isk management measures	utilised must also co	mply with all relevant local regulations.		
according to Article 37(4) of REAC apply:	CH do not					
3. Exposure estimation and referen	non to its source					
Health						
Information for contributing scenari	o (1): PROC7, PROC	214				
•	. ,		CTRA Worker v3. On	ly highest figures are presented here.		
Exposure estimation:				, , , , , , , , , , , , , , , , , , , ,		
·	Route	Exposure estimate	RCR	<u>Notes</u>		
Worker, long-term, systemic	Dermal	3,43 mg/kg bw/day	0,429	PROC14		
Worker, long-term, systemic	Inhalation	13,5 mg/m3	0,614	PROC7		
Worker, long-term, systemic	Combined routes	N/A	0,774	PROC7		
Worker, acute, systemic	Dermal	3,43 mg/kg bw/day	0,086	PROC14		
Worker, acute, systemic	Inhalation	54,06 mg/m3	0.492	PROC7		
		N/A	0,524	PROC7		
Worker, acute, systemic	Combined routes	IN/A	0,524	FROCI		
Environment Information for contributing scenari	a (2): EPC4					
Assessment method: EUSES 2.1.2						
Exposure estimation: Compartment	PEC	RCR	Notes			
Freshwater		<0,01	NOLES			
	0,00372 mg/L	<0,01				
Freshwater sediment	0,019 mg/kg dw	,				
Marine water	0,000371 mg/L	<0,01				
Marine water sediment	0,00192 mg/kg dw	· · ·				
Soil	0,014 mg/kg dw	0,03				
STP	0 mg/L	<0,01				
Man via environment	0,038 mg/m3 / 0,0 bw/day	41 mg/kg <0,01 / <0,0	1 Inhalation / Ora	al		
Man via environment-Combined routes	N/A	0,017				
RCR=Risk characterization ratio (P	EC/PNEC or Exposu	ure estimate/DNEL); PEC=I	Predicted environmer	ntal concentration.		
4. Guidance to the Downstream Us	ser to evaluate whet	her he works inside the bo	undaries set by the	ES		
				Management Measures/Operational		
are adop required hours/da 374) in c exhaust (95% eff which ca PROC10	ted, then users shou Duration of activity PROC5, PROC8 combination with basi ventilation: PROC5, ectiveness). Person uses serious eye irri 0, PROC13, PROC14	Id ensure that risks are ma :: PROC5, PROC6, PROC6 i, PROC8b, PROC9, PROC6 c employee training. PROC7 PROC6, PROC10, PROC1 al protective equipment (PF tation: Chemical goggles. (4: Up to 100%. PROC7: <=	naged to at least equ 3b, PROC10, PROC1 C10, PROC13: Wear C7: Gloves APF 20 (m 3, PROC14: Yes (90 PE) that has to be app Concentration of subs 60%.	ment Measures/Operational Conditions ivalent levels. Indoor use, no respirator 3, PROC14: <=8 hours/day; PROC7 >4 chemical resistant gloves (tested to EN ninimum efficiency dermal: 95%). Local % effectiveness). PROC7, PROC8b: Yes blied when using a low hazard substance stance: PROC5, PROC6, PROC8b,		
necessa can be a	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 (9): Use at industrial sites - Photo-chemicals

1. Exposure scenario (9)

Short title of the exposure scenario:

Use at industrial sites - Photo-chemicals

List of use descriptors:

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).

2.1 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:	- PROC13: 480 cm2 (two hands, face side only).
C .	- 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.
Fechnical 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 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.
apply:	Minimisation of splashes and spills.
арру.	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: 0.067 ton/day.
	Maximum annual use at a site: 20 tons/year.
	Percentage of tonnage used at regional scale: 10 %.

Environmental factors not influenc management:		Tate of receiving Sul	ace water: >=18000 m3/o	aay (actault).		
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: 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		Dry sludge application to agricultural soil: Yes (default).				
reduce or limit discharges, air emi releases to soil:	ssions and					
Conditions and measures related sewage treatment plant:	Size	e of municipal sewage	· · ·	>=2000 m3/day (standard town).		
Conditions and measures related				perations: No (low risk) (ERC based		
reatment of waste for disposal:			-	ult conditions. Low risk assumed for nal/local legislation is sufficient.)		
Conditions and measures related		-		mai/local legislation is sufficient.)		
recovery of waste:		ulations.	gaing of waste should be			
Additional good practice advice. C according to Article 37(4) of REAC apply:	•	isk management mea	sures utilised must also c	omply with all relevant local regulations.		
3. Exposure estimation and referen	nce to its source					
Iealth						
nformation for contributing scenario	o (1): PROC8a, PRO	C8b, PROC13				
Assessment method: CHESAR V2	.2 Worker TRA v3. C	only highest figures are	e presented here.			
Exposure estimation:						
	<u>Route</u>	Exposure estimate	RCR	<u>Notes</u>		
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/day	0,171	PROC8a, PROC8b, PROC13		
Worker, long-term, systemic	Inhalation	4,506 mg/m3	0,205	PROC8a, PROC13		
Worker, long-term, systemic	Combined routes	N/A	0,376	PROC8a, PROC13		
Worker, acute, systemic	Dermal	1,371 mg/kg bw/day	0,034	PROC8a, PROC8b, PROC13		
Worker, acute, systemic	Inhalation	18,02 mg/m3	0,164	PROC8a, PROC13		
Worker, acute, systemic	Combined routes	N/A	0,198	PROC8a, PROC13		
Invironment						
Information for contributing scenario						
Assessment method: EUSES 2.1.2						
Exposure estimation:	850		NI-4			
<u>Compartment</u>	PEC	RCR	<u>Notes</u>			
Freshwater	0,427 mg/L	0,427				
Freshwater sediment	2,208 mg/kg dw	0,419				
Marine water	0,043 mg/L	0,427				
Marine water sediment	0,221 mg/kg dw	0,419				
Soil	0,148 mg/kg dw	0.324				
STP	4,233 mg/L	0,108				
Man via environment	0,015 mg/m3 / 0,0 bw/day	27 mg/kg <0,01 /	<0,01 Inhalation / O	ral		
Man via environment-Combined	N/A	<0,01				
routes						

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: 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:	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	unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. (10): Use at industrial sites - Use in polymer preparations
Exposure scenario 1. Exposure scenar	(10): Use at industrial sites - Use in polymer preparations
•	(10): Use at industrial sites - Use in polymer preparations to (10)
1. Exposure scenar Short title of the exp	(10): Use at industrial sites - Use in polymer preparations to (10)
1. Exposure scenar Short title of the exp	(10): Use at industrial sites - Use in polymer preparations to (10) posure scenario: es - Use in polymer preparations
1. Exposure scenar Short title of the exp Use at industrial sit List of use descripto	(10): Use at industrial sites - Use in polymer preparations to (10) posure scenario: es - Use in polymer preparations
1. Exposure scenar Short title of the exp Use at industrial sit List of use descripto	(10): Use at industrial sites - Use in polymer preparations to (10) tosure scenario: es - Use in polymer preparations trs: jory (SU): SU0, SU11, SU12
1. Exposure scenar Short title of the exp Use at industrial sit List of use descriptor Sector of use cated	(10): Use at industrial sites - Use in polymer preparations io (10) iosure scenario: es - Use in polymer preparations iors: pory (SU): SU0, SU11, SU12 PC): PC32

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).

2.1 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: 480 cm2 (two hands, face side only).
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. according to Article 37(4) of RE/ apply:	ACH do not M A F T N	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 exp	osure					
Product characteristics:		Physical state: liquid.				
		Vapour pressure: 7 Pa at 20 °C				
Amounts used:		Aaximum daily use at a site: 1 t	•			
		Aaximum annual use at a site: 2 Percentage of tonnage used at	•			
Frequency and duration of use:		Emission days: 20 days/year.				
Environmental factors not influe		low rate of receiving surface w	ater: >=18000 m3/o	lay (default).		
management:	······	.				
Other given operational conditio	ns affecting	ndoor use.				
environmental exposure:			ess (initial release)	: 1.00; (final release): 1.00. Local	release	
		ate: 1000 kg/day.	, ,, ,,			
		Release fraction to wastewater elease rate: 0 kg/day.	rom process (initia	release): 1,0; (final release): 0,0.	LOCAI	
		Release fraction to soil from pro	cess (final release)	: 0.05.		
Technical conditions and measu				6). No release to waste water, all u	used	
level (source) to prevent release	-			bus wastes to hazardous waste		
		ncineration.				
Technical onsite conditions and		Dry sludge application to agricu	ltural soil: Yes (defa	ult).		
reduce or limit discharges, air er releases to soil:	missions and					
Conditions and measures relate	d to municipal	Junicipal Sewage Treatment P	ant (STP): Yes (Ff	ficiency= 87.36%		
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 relate			· · · · · · · · · · · · · · · · · · ·	erations: No (low risk) (ERC base	ed	
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 relate			of waste should co	mply with applicable local and/or r	national	
recovery of waste: Additional good practice advice.		egulations.	utilized must also a	omply with all relevant local regula	tions	
according to Article 37(4) of RE/		All risk management measures		omply with all relevant local regula	ations.	
apply:						
3. Exposure estimation and refer	ence to its source					
Health						
Information for contributing scena	ario (1): PROC13					
Assessment method: CHESAR V	/2.2 Worker TRA v3	l.				
Exposure estimation:						
	<u>Route</u>	Exposure estimate	RCR	<u>Notes</u>		
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/day	0,171			
Worker, long-term, systemic	Inhalation	4,506 mg/m3	0,205			
Worker, long-term, systemic	Combined route	es N/A	0,376			
Worker, acute, systemic	Dermal	1,371 mg/kg bw/day	0,034			
Worker, acute, systemic	Inhalation	18,02 mg/m3	0,164			
Worker, acute, systemic	Combined route	es N/A	0,198			
Environment						
Information for contributing scena	ario (2): ERC4					
Assessment method: EUSES 2.1	.2.					
Exposure estimation:						
Compartment	PEC	RCR	<u>Notes</u>			

Compartment		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-Co routes	mbined	N/A	<0,01	
RCR=Risk characterization	on ratio (P	EC/PNEC or Exposure estimate	/DNEL); PEC=Prec	licted environmental concentration.
4. Guidance to the Down	stream U	ser to evaluate whether he work	s inside the bound	aries set by the ES
	required basic en that has	. Duration of activity: <=8 hours/ pployee training. Local exhaust v	day. Wear chemica entilation: Yes (90	ed to at least equivalent levels. Indoor use, no respirator I resistant gloves (tested to EN 374) in combination with % effectiveness). Personal protective equipment (PPE) /hich causes serious eye irritation: Chemical goggles.
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 wastewa 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.			
xposure scenario (11)	: Use at i	industrial sites - Textile dyes,	finishing/impreg	nation products
1. Exposure scenario (11		• · ·		•
Short title of the exposure	e scenario):		
	extile dye	es, finishing/impregnation product	ts	
List of use descriptors:				
Sector of use category (Product category (PC): F				
0 , (,)		5, PROC6, PROC7, PROC8a, P	ROC8h PROC9 F	PROC10 PROC13 PROC14
		ERC): ERC4 (SpERC: TEGEWA		
		er scenarios and corresponding		
	-			iquid materials in the context of manufacturing or
formulating sectors, as v	-		-	· · · · · · · · · · · · · · · · · · ·
PROC6 Calendering ope	erations. F	Processing of large surfaces at el	evated temperature	e e.g. calendering of textile, rubber or paper.
PROC7 Industrial sprayi	ng. Air dis	persive techniques i.e. dispersio	n into air (= atomiz	ation) by e.g. pressurized air, hydraulic pressure or
centrifugation, applicable	e for liquid	s and powders.		
PROC8a Transfer of sub	ostance or	mixture (charging and dischargi	ng) at non-dedicate	ed 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
Product characteristics:	 Good standard of personal hygiene 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:	 General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment: PROC8b, PROC9: Semi-closed process with occasional controlled exposure. PROC5, PROC6, PROC7, PROC8a, PROC10, PROC13, PROC14: No. Local exhaust ventilation: PROC5, PROC6, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC7, PROC8b: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
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.

		Physical state: liquid. /apour pressure: 7 Pa	at 20 °C		
Amounts used:				on/day	
Amounta used.		Maximum daily use at a site: 0.045 ton/day. Maximum annual use at a site: 10 tons/year.			
		Percentage of tonnage		•	
Frequency and duration of use:	E	Emission days: 220 da	ys/year.		
Environmental factors not influe	nced by risk	low rate of receiving s	urface water:	>=18000 m3/day	(default).
management:					
Other given operational condition	-	ndoor use.	. ,		
environmental exposure:		Release fraction to air ate: 0 kg/day (SpERC		(initial release): 0.	0; (final release): 0.0. Local release
				process (initial re	lease): 1.00; (final release): 1.00.
		ocal release rate: 45 l		• •	
	F	Release fraction to soil	from process	(final release): 0.	0 (SpERC TEGEWA 6).
Technical onsite conditions and		Dry sludge application	to agricultural	soil: Yes (default).
reduce or limit discharges, air e	missions and				
releases to soil:			the east Direct (07.000()
Conditions and measures relate sewage treatment plant:		Municipal Sewage Trea			ency=87.36%). 000 m3/day (standard town).
Conditions and measures relate					ations: No (low risk) (ERC based
treatment of waste for disposal:					conditions. Low risk assumed for
•			-		local legislation is sufficient.)
Conditions and measures relate	d to external	External recovery and	recycling of wa	aste should comp	ly with applicable local and/or nation
recovery of waste:		egulations.			
Additional good practive advice.	-	All risk management m	easures utilise	ed must also com	ply with all relevant local regulations
according to Article 37(4) of RE	ACH do not				
apply:					
3. Exposure estimation and refe	rence to its source				
3. Exposure estimation and refe Health		20014			
3. Exposure estimation and refe Health Information for contributing scena	ario (1): PROC7, PF			Worker v2. Only	highest figures are presented here
3. Exposure estimation and reference of the second	ario (1): PROC7, PF		ECETOC TRA	Worker v3. Only	highest figures are presented here.
3. Exposure estimation and refe Health Information for contributing scena	ario (1): PROC7, PF CHESAR v2.2 Work	er TRA v3. PROC7: E			
3. Exposure estimation and reference of the second	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u>	er TRA v3. PROC7: E	te	RCR	Notes
3. Exposure estimation and reference of the set of the	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da	te	<u>RCR</u> 0,429	Notes PROC14
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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3	te	RCR 0,429 0,614	Notes PROC14 PROC7
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	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A	te ay	RCR 0,429 0,614 0,774	Notes PROC14 PROC7 PROC7
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	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da	te ay	RCR 0,429 0,614 0,774 0,086	Notes PROC14 PROC7 PROC7 PROC14
3. Exposure estimation and referent Health Information for contributing scenar 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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3	te ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
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	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3	te ay	RCR 0,429 0,614 0,774 0,086	Notes PROC14 PROC7 PROC7 PROC14
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal Inhalation Combined route Dermal Inhalation Combined route	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A	te ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal Inhalation Combined route Dermal Inhalation Combined route	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A	te ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Exposure estimation: Worker, long-term, systemic Worker, long-term, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Worker, acute, systemic Environment	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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A	te ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
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 Environment Information for contributing scenar	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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A	te ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
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 Environment Information for contributing scenar Assessment method: EUSES 2.2	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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A	te ay ay	RCR 0,429 0,614 0,774 0,086 0,492	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
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 Environment Information for contributing scenar Assessment method: EUSES 2. Context Exposure estimation:	ario (1): PROC7, PF CHESAR v2.2 Work <u>Route</u> Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE I.2.	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6).	te ay ay ay	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
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 Environment Information for contributing scenar Assessment method: EUSES 2.7 Exposure estimation: Compartment	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE I.2. PEC	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC 12000000000000000000000000000000000000	<u>te</u> ay ay <u>ay</u> <u>3</u> 8	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported to the procent) 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 scenar Assessment method: EUSES 2.7 Exposure estimation: Compartment Freshwater	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: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC 12000000000000000000000000000000000000	<u>te</u> ay ay ay B 8 3	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported in the second 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 scenar Assessment method: EUSES 2. (Exposure estimation): Compartment Freshwater Freshwater Freshwater sediment	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	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC I 0,28 v 0,28 0,28	te ay ay ay <u>ay</u> <u>8</u> 3 8	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Content 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 scenar Assessment method: EUSES 2. (Exposure estimation: Compartment Freshwater Freshwater Freshwater sediment Marine water	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 0,029 mg/L	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC I 0,28 v 0,28 0,28	te ay ay ay 2 8 8 3 8 3 3	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported in the formation) 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 scenar Assessment method: EUSES 2.7 Exposure estimation: Compartment Freshwater Freshwater Freshwater Marine water sediment	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	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC 10,28 v 0,28 v 0,28 v 0,28	te ay ay ay 3 3 8 3 8 3 3 9	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported in the set of the set o	ario (1): PROC7, PF CHESAR v2.2 Work Dermal Inhalation Combined route Dermal Inhalation Combined route ario (2): ERC4 (SpE I.2. PEC 0,288 mg/L 1,489 mg/kg dv 0,029 mg/L 0,149 mg/kg dw 2,843 mg/L	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC TEGEWA 6). RC TEGEWA 6). RC 1 0,28 0 0,28 0 0,21 0,07	te ay ay ay 3 8 3 8 3 3 9 3	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported in the second s	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/	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC TEGEWA 6). RC TEGEWA 6). RC 1 0,28 0 0,28 0 0,21 0,07	te ay ay ay 3 3 8 3 3 9 3	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7
3. Exposure estimation and referent Health Information for contributing scenar Assessment method: PROC14: (Contemported in the set of the set o	ario (1): PROC7, PF CHESAR v2.2 Work Route Dermal Inhalation Combined route Dermal Inhalation Combined route 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/ mg/kg bw/day	er TRA v3. PROC7: E Exposure estima 3,43 mg/kg bw/da 13,5 mg/m3 es N/A 3.43 mg/kg bw/da 54,06 mg/m3 es N/A RC TEGEWA 6). RC TEGEWA 6). RC 1 Q28 v 0,28 v 0,28 v 0,21 0,07	te ay ay 3 3 3 9 3 11 / <0,01	RCR 0,429 0,614 0,774 0,086 0,492 0,524	Notes PROC14 PROC7 PROC7 PROC14 PROC14 PROC7

4. Guidance to the D	Downstream User to evaluate whether he works inside the boundaries set by the ES					
Health:	Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Condition are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, no respirat required. Duration of activity: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <=& hours/day; PROC7 >4 hours/day. PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13: Wear cher resistant gloves (tested to EN 374) in combination with basic employee training. PROC7: Gloves APF 20 (minimu efficiency dermal: 95%). Local exhaust ventilation: PROC5, PROC6, PROC8a, PROC8a, PROC9, 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, PROC8b, PROC9, PROC10, PROC13, PRO 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 scenari	o (12)					
Short title of the exp						
	es - Washing & cleaning products - Cosmetic & personal care products					
List of use descripto Sector of use categ Product category (F	ory (SU): SU0					
	PROC): PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13.					
Environmental relea	ase category (ERC): ERC4 (SpERC: ESVOC 8)					
PROC8a Transfer of bagging and weighi PROC8b Transfer of PROC9 Transfer of both capture vapou PROC10 Roller app potential exposure a	icable for liquids and powders. of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, ng. of 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 r and aerosol emissions and minimise spillage. olication or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with arising from splashes. t of articles by dipping and pouring.					
	g environmental scenario and corresponding ERCs:					
	eactive processing aid at industrial site (no inclusion into or onto article).					
Chapter R.12: Use descr	n standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, iptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The stry 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 worke						
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 characteris	tics: Concentration of substance: - PROC8a, PROC8b, PROC9, PROC10, PROC13: Up to 100%. - PROC7: <=60%. Physical state: liquid. Vapour pressure: <7 Pa at 20 °C					

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:	 General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Containment: PROC8b, PROC9: Semi-closed process with occasional controlled exposure. PROC7, PROC8a, PROC10, PROC13: No. Local exhaust ventilation: PROC8a, PROC9, PROC10, PROC13: Yes (90% effectiveness). PROC7, PROC8b: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
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 rela recovery of waste: Additional good practive advic according to Article 37(4) of R apply:	re	•	recycling of	waste should comr	h	
Additional good practive advic according to Article 37(4) of R apply:				waste should comp	bly with applicable local and/or nationa	
	EACH do not	regulations. All risk management measures utilised must also comply with all relevant local regulations.				
a exposure estimation and ref	erence to its source					
Health						
Information for contributing sce	nario (1): PROC7, PRO	DC10				
Assessment method: PROC10	CHESAR v2.2 Worke	er TRA v3. PROC7:	ECETOC TR	A Worker v3. Only	highest figures are presented here.	
Exposure estimation:				-		
	<u>Route</u>	Exposure estim	<u>ate</u>	RCR	<u>Notes</u>	
Worker, long-term, systemic	Dermal	2,743 mg/kg bw	/day	0,343	PROC10	
Worker, long-term, systemic	Inhalation	13,5 mg/m3		0,614	PROC7	
Worker, long-term, systemic	Combined routes	s N/A		0,774	PROC7	
Worker, acute, systemic	Dermal	2,743 mg/kg bw	/day	0,069	PROC10	
Worker, acute, systemic	Inhalation	54,06 mg/m3		0,492	PROC7	
Worker, acute, systemic	Combined routes			0,524	PROC7	
Environment						
Information for contributing sce	nario (2): ERC4 (SpEF	RC ESVOC 8).				
Assessment method: EUSES 2	.1.2.					
Exposure estimation:						
Compartment	PEC	<u>RC</u>	R	<u>Notes</u>		
Freshwater	0,00688 mg/L	<0	01			
Freshwater sediment	0,036 mg/kg dw	<0	01			
Marine water	0.000687 mg/L	<0	01			
Marine water sediment	0,00355 mg/kg c	lw <0	01			
Soil	0,012 mg/kg dw	0,0	27			
STP	0,032 mg/L	<0	01			
Man via environment	0,023 mg/m3 / 0 bw/day	,025 mg/kg <0	01 / <0,01	Inhalation / Oral		
Man via environment-Combine routes	ed N/A	<0	01			
RCR=Risk characterization rati	o (PEC/PNEC or Expo	sure estimate/DNE	.); PEC=Pred	licted environmenta	al concentration.	
4. Guidance to the Downstrear	n User to evaluate wh	ether he works insi	de the bound	aries set by the E	6	
Con are a requ PRC with PRC Pers eye	ditions outlined in Secti adopted, then users sh ired. Duration of activi iC8a, PROC8b, PROC basic employee trainin iC8a, PROC9, PROC1 onal protective equipm	on 2 are implement ould ensure that risk ty: PROC8a, PROC 9, PROC10, PROC g. PROC7: Gloves 0, PROC13: Yes (9 nent (PPE) that has	ed. Where off as are manage 8b, PROC9, 1 13: Wear che APF 20 (minir 0% effectiven o be applied	ner Risk Manageme ed to at least equiv PROC10, PROC13 mical resistant glov mum efficiency dern ness). PROC7, PRO when using a low h	Management Measures/Operational ent Measures/Operational Conditions alent levels. Indoor use, no respirator 8:<=8 hours/day; PROC7 >4 hours/day ves (tested to EN 374) in combination mal: 95%). Local exhaust ventilation: DC8b: Yes (95% effectiveness). mazard substance which causes seriou C8b, PROC9, PROC10, PROC13: Up	
nece can	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 (13): Use	at industrial sites -	Industrial use as l	aboratory re	eagent		

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
	 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%.
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 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. Dry sludge application to agricultural soil: Yes (default).				
Technical onsite conditions a reduce or limit discharges, air releases to soil:						
Conditions and measures rela sewage treatment plant:	Municipal Sewage Size of municipal		. , .	ficiency=87.36%). ፦=2000 m3/day (standard town).		
Conditions and measures relative treatment of waste for dispos	assessment demo	onstrating 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 rela recovery of waste:	ated to external	External recovery regulations.	and recycling of	waste should co	mply with applicable local and/or nationa	
Additional good practive advi according to Article 37(4) of F apply:	-	All risk manageme	ent measures ut	lised must also co	omply with all relevant local regulations.	
3. Exposure estimation and re	ference to its sourc	e				
Health						
Information for contributing sco	enario (1): PROC15					
Assessment method: CHESAI	R V2.2 Worker TRA	v3.				
Exposure estimation:						
	<u>Route</u>	<u>Exposure e</u>	<u>stimate</u>	<u>RCR</u>	<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 ro			0,145		
Worker, acute, systemic	Dermal	0.34 mg/kg	-	<0,01		
Worker, acute, systemic	Inhalation	9,011 mg/m	3	0,082		
Worker, acute, systemic	Combined ro	utes N/A		0,09		
Environment						
Information for contributing sc						
Assessment method: EUSES	2.1.2.					
Exposure estimation: Compartment	PEC		RCR	Notes		
Freshwater	0,00372 mg/l		<0,01	110105		
Freshwater sediment	0,019 mg/kg		<0,01			
Marine water	0,000371 mg		<0,01			
Marine water sediment	0,00192 mg/k		<0,01			
Soil	0,00821 mg/l	•	0,018			
STP	0 mg/L	ig an	<0.01			
Man via environment	-	n3 / 0,0047 mg/kg	<0,01 / <0,01	Inhalation / Or	al	
Man via environment-Combir routes	5		<0,01			
RCR=Risk characterization ra	tio (PEC/PNEC or E	xposure estimate/D	NEL); PEC=Pre	dicted environme	ntal concentration.	
4. Guidance to the Downstrea						
Cor are requ equ	nditions outlined in S adopted, then users uired. Duration of ac	ection 2 are implem should ensure that tivity: <=8 hours/da as to be applied wh	nented. Where o t risks are manag ay. Local exhaus en using a low h	ther Risk Manage ged to at least equ st ventilation: Yes azard substance	k Management Measures/Operational ment Measures/Operational Conditions uivalent levels. Indoor use, no respirator (90% effectiveness). Personal protectiv which causes serious eye irritation:	
Environment: Gui nec can	dance is based on a essary to define app be achieved using o	ssumed operating o propriate site-specifionsite/offsite techno	conditions which ic risk managem blogies, either ald	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 PROC23, PROC24, PROC25). Dustiness of solids: (applicable only to PROC14 & PROC21). - PROC14: Low - PROC21: Medium
Frequency and duration of use/exposure:	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.
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:	 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. 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%).

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: 0.00055 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	Flow rate of receiving surface water: >=18000 m3/day (default).
management:	
Other given operational conditions affecting	Indoor use.
environmental exposure:	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	Dry sludge application to agricultural soil: Yes (default).
reduce or limit discharges, air emissions and	
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 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 practive 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:	
3. Exposure estimation and reference to its sour	

Health

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:
Exposure	countation.

<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	RCR	<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	

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 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:	 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 (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:	 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.
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: 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. - 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.
Technical conditions and measures at process	Deviation from Advanced REACH Tool: PROC11: Respiratory protective equipment.
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: Outdoors. Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation:	 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. 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%).
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.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	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.
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 source Health

Information for contributing scenario (1): PROC10, PROC11 (50%), PROC23.

Assessment method: PROC10: ECETOC TRA v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. 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: RPE=Respiratory protection equipment. PROC8a and PROC10 evaluated both with and without respiratory protection equipment.

	Route	Exposure	estimate	RCR	Notes
Worker, long-term, systemic	Dermal	6,85 mg/kg		0,856	PROC11 (50%)
		, 0.0	j Dw/day		PROC23
Worker, long-term, systemic	Inhalation	20 mg/m3		0,909	
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 scenario	o (2): ERC8d				
Assessment method: EUSES 2.1.2					
Exposure estimation:					
<u>Compartment</u>	PEC		<u>RCR</u>	<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 mg/kg bw/day	/ 0,00074	<0,01 / <0,01	Inhalation / Oral	
Man via environment-Combined routes	N/A		<0,01		
RCR=Risk characterization ratio (P	EC/PNEC or Exposu	re estimate/	DNEL); PEC=Pre	dicted environmental	concentration.
4. Guidance to the Downstream Us	ser to evaluate whet	her he works	s inside the bound	daries set by the ES	
Condition are adop protectio PROC24	ns outlined in Sectior ted, then users shou n: PROC5, PROC6, l, PROC25: no respir	n 2 are imple Id ensure tha PROC8a, PI rator required	mented. Where of at risks are manag ROC8b, PROC9, J. PROC11: Yes (her Risk Managemen ged to at least equiva PROC10, PROC13, mimimum efficiency i	anagement Measures/Operational nt Measures/Operational Conditions lent levels. Outdoor use. Respiratory PROC14, PROC21, PROC23, inhalation: 90%). Duration of activity: 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, 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: - 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 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 management:	Exposed skin surface: 240 cm2 (one hand, face side only).
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 management:	Flow rate of receiving surface water: >=18000 m3/day (default).

Other given operational condition environmental exposure:	F F F r	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 n reduce or limit discharges, air em releases to soil:	neasures to		-	ıral soil: Yes (defa		
sewage treatment plant:	Conditions and measures related to municipalMunicipal Sewage Treatment Plant (STP): Yes (Efficiency=87.36%).ewage treatment plant:Size of municipal sewage system/treatment plant: >=2000 m3/day (stand					
Conditions and measures related treatment of waste for disposal:	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 related recovery of waste:	r	egulations.			mply with applicable local and/or national	
Additional good practive advice. (according to Article 37(4) of REA apply:	CH do not	All risk managen	nent measures ut	ilised must also co	omply with all relevant local regulations.	
3. Exposure estimation and refere	nce to its source					
Health Information for contributing scenar	io (1) [.] PROC15					
Assessment method: CHESAR V2						
Exposure estimation:						
	Route	Exposure	estimate	RCR	Notes	
Worker, long-term, systemic	Dermal	0,34 mg/kg		0,043		
Worker, long-term, systemic	Inhalation	4,506 mg/r	n3	0,205		
Worker, long-term, systemic	Combined route	es N/A		0,247		
Worker, acute, systemic	Dermal	0,34 mg/kg	j bw/day	<0,01		
Worker, acute, systemic	Inhalation	18,02 mg/r	n3	0,164		
Worker, acute, systemic	Combined route	es N/A		0,172		
Environment						
Information for contributing scenar Assessment method: EUSES 2.1.2 Exposure estimation:						
<u>Compartment</u>	PEC		RCR	<u>Notes</u>		
Freshwater	0,067 mg/L		0,067			
Freshwater sediment	0,346 mg/kg dv	/	0,066			
Marine water	0,0069 mg/L		0,067			
Marine water sediment	0,035 mg/kg dv	/	0,066			
Soil	0,028 mg/kg dv	/	0,062			
STP	0,632 mg/L		0,016			
Man via environment	0,0000847 mg/i mg/kg bw/day	m3 / 0,00237	<0,01 / <0,01	Inhalation / Or	al	
Man via environment-Combined routes	N/A		<0,01			
RCR=Risk characterization ratio (F						
4. Guidance to the Downstream U						
Conditio are ado requireo equipmo	ons outlined in Sec pted, then users sl I. Duration of activ	tion 2 are imple hould ensure that vity: <=8 hours/o to be applied w	mented. Where c at risks are mana lay. Local exhau hen using a low l	ther Risk Manage ged to at least equ st ventilation: Yes nazard substance	k Management Measures/Operational ment Measures/Operational Conditions uivalent 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, Cleaner, 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 7000 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); 0.22 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.

	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.
	 PC3: (Spray application):ventilation rate: 0.5 air changes/ hour; (Electrical evaporators): ventilation rate: 1 air change/ hour; (Spray application (child, post application); Electrical 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.
	 PC23: (Shoe polish spray; Shoe cream): ventilation rate: 1.5 air changes/ hour. PC28: (Perfumed articles; Perfumed candles): ventilation rate: 1 air change/ hour.
	- PC31: (Shoe polish spray; Shoe cream): ventilation rate: 1.5 air changes/ hour; (Floor
	polish; Floor sealer): ventilation rate: 0.5 air changes/ hour.
	 PC34: (Residues on clothing after washing with liquid detergent): Not relevant. PC35: (Residues on clothing after washing with liquid detergent): Not relevant; (Liquid
	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.
	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	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 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	Particular considerations on the waste treatment operations: No (low risk) (ERC based
reatment 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 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.
B. Exposure estimation and reference to its source	Ce
lealth	

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:

Route Exposure estimate RCR Notes	
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	<u>Route</u>	Exposure e	stimate	<u>RCR</u>	<u>Notes</u>
Consumer, short-term, systemic	Dermal	16,5 mg/kg bw/day		0,825	PC9a (Pneumatic spraying)
Consumer, short-term, systemic	Inhalation	25,6 mg/m3		0,948	PC28 (Perfumed candles)
Consumer, short-term, systemic	Combined routes	N/A		0,981	PC9a (Brush & Roller painting with solvent rich paint)
Consumer, long-term, systemic	Dermal	2,33 mg/kg	bw/day	0,583	PC3 (Electrical evaporators (child, post application))
Consumer, long-term, systemic	Inhalation	3,2 mg/m3		0,593	PC28 (Perfumed candles)
Consumer, long-term, systemic	Oral	1,7 mg/kg b	w/day	0,425	PC3 (Spray application (child, post application))
Consumer, long-term, systemic	Combined routes	N/A		0,938	PC3 (Electrical evaporators (child, post application))
Environment					
Information for contributing scena	ario (2): ERC8a, ERC8	d			
Assessment method: EUSES 2.1	.2.				
Exposure estimation:					
<u>Compartment</u>	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-Combined routes	N/A		<0,01		
RCR=Risk characterization ratio	(PEC/PNEC or Exposi	ure estimate/D	NEL); PEC=Pre	dicted environmental	concentration.
4. Guidance to the Downstream	User to evaluate whet	her he works	inside the bound	daries set by the ES	
Condit	•	n 2 are implen	nented. Where of	her Risk Managemer	anagement Measures/Operational ht Measures/Operational Conditions lent levels.
Environment: Guidar necess can be	ace is based on assum ary to define appropria achieved using onsite	ed operating ate site-specif /offsite techno	conditions which ic risk managem blogies, either alc	may not be applicabl ent measures. Requi one or in combination	e to all sites; thus, scaling may be red removal efficiency for wastewate . If scaling reveals a condition of assessment is required.