

SAFETY DATA SHEET

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

1.1 Product identifier

Product name: Eastman EastaPure(TM) n-Butyl Acetate

Product No.: EAN 900710. 19881-00, P1988100, P1988101, P1988103, E1988101, P1988107, P1988106, P1988105, P1988104

Synonyms, Trade Names: 19881-00

Additional identification

Chemical name: acetic acid, butyl ester
REACH Registration No.: 01-2119485493-29-0010
CAS-No.: 123-86-4

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

Identified uses: Solvent Please refer to the Annex for a listing of uses.

Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier

China Amines Co., Ltd
UNIT 1021, BEVERLEY COMMERCIAL CENTRE, 87-105 CHATHAM ROAD SOUTH,
TSIM SHA TSUI, KOWLOON HONG KONG
Emergency Contact : +86 18938922889

Visit our website at www.chinaamines.com or email emnmsdsinfo@chinaamines.com

National Supplier

Eastman Chemical B.V.
Fascinatio Boulevard 602-614
2909 Capelle aan den IJssel
The Netherlands
Telephone: (31) 10 2402 111

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Ireland; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Regulation No. 1272/2008.

Physical hazards

Flammable liquids Category 3 H226: Flammable liquid and vapor.

Health hazards

Specific target organ toxicity - single exposure Category 3 H336: May cause drowsiness or dizziness.

Hazard summary

Physical hazards: Flammable liquid and vapor.

Health hazards

Inhalation: May cause drowsiness or dizziness.

Eye contact: None known.

Skin contact: Repeated exposure may cause skin dryness or cracking.

Ingestion: None known.

Other Health Effects: No data available.

Environmental hazards: Not applicable

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

R10: Flammable.

R66: Repeated exposure may cause skin dryness or cracking.

R67: Vapours may cause drowsiness and dizziness.

2.2 Label elements



Signal words: WARNING!

Hazard Statement(s): H226: Flammable liquid and vapor.
H336: May cause drowsiness or dizziness.

Precautionary statement

Prevention:	P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking. P233: Keep container tightly closed. P240: Ground/bond container and receiving equipment. P241: Use explosion-proof electrical/ventilating/lighting/equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P280: Wear protective gloves/protective clothing/eye protection/face protection. P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P271: Use only outdoors or in a well-ventilated area.
Response:	P370 + 378: In case of fire: Use water spray, carbon dioxide, dry chemical or foam for extinction. P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell.
Storage:	P403+P233: Store in a well-ventilated place. Keep container tightly closed. P235: Keep cool. P405: Store locked up.
Disposal:	P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Supplemental label information

EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards: None known.

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
n-butyl acetate	100%	CAS-No.: 123-86-4 EC No.: 204-658-1 INDEX No.: 607-025-00-1 REACH Registration No.: 01-2119485493-29-0010	

Explanation for Notes (if applicable):

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has workplace exposure limit(s).

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
n-butyl acetate	DSD:	R10, R66, R67	
	CLP:	Flam. Liq. 3, H226; STOT SE3, H336	

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.:

The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.

Skin contact: Remove contaminated clothing and shoes. Wash with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

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

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Flammable liquid and vapor. USE WATER WITH CAUTION. Material will float and may ignite on surface of water.

5.1 Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide. Foam.

Unsuitable extinguishing media: None known.

- 5.2 Special hazards arising from the substance or mixture:** Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations.
- 5.3 Advice for firefighters**
- Special fire fighting procedures:** Water may be ineffective in fighting the fire. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures:** Wear appropriate personal protective equipment.
- 6.2 Environmental precautions:** Avoid release to the environment.
- 6.3 Methods and material for containment and cleaning up:** Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams.
- Notification Procedures:** In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

- 7.1 Precautions for safe handling:** Avoid breathing high vapor concentrations. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Wash thoroughly after handling.
- 7.2 Conditions for safe storage, including any incompatibilities:** Keep container tightly closed and in a well-ventilated place.
- 7.3 Specific end use(s):** Solvent

SECTION 8: Exposure controls/personal protection

8.1 Control parameters Occupational exposure limits

Country specific exposure limits have not been established or are not applicable unless listed below.

DNEL-Values

Critical component	Type	Route of Exposure		Remarks
n-butyl acetate	Workers (industrial/professional)	DNEL Human inhalation, short-term (acute); systemic	960 mg/m ³	
n-butyl acetate		DNEL Human inhalation, short-term (acute); local	960 mg/m ³	
n-butyl acetate		DNEL Human inhalation long-term (repeated); systemic	480 mg/m ³	
n-butyl acetate		DNEL Human inhalation long-term (repeated); local	480 mg/m ³	
n-butyl acetate	General Population	DNEL Human inhalation, short-term (acute); systemic	859,7 mg/m ³	
n-butyl acetate		DNEL Human inhalation, short-term (acute); local	859,7 mg/m ³	
n-butyl acetate		DNEL Human inhalation long-term (repeated); systemic	102,34 mg/m ³	
n-butyl acetate		DNEL Human inhalation long-term (repeated); local	102,34 mg/m ³	

PNEC-Values

Critical component	Environmental compartment		Remarks
n-butyl acetate	Water	0,18 mg/l	
n-butyl acetate	Seawater	0,018 mg/l	
n-butyl acetate	Aqua Intermittent	0,36 mg/l	
n-butyl acetate	Freshwater Sediment	0,981 mg/kg	dry
n-butyl acetate	Saltwater Sediment	0,0981 mg/kg	dry
n-butyl acetate	Soil	0,0903 mg/kg	dry
n-butyl acetate	Sewage Treatment Plant	35,6 mg/l	

8.2 Exposure controls

Appropriate engineering controls:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

- General information:** All information for relevant exposure scenarios including risk management measures are listed in the Annex. PPE selections vary based on potential exposure conditions such as application, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material is based upon intended, normal usage. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Provide eyewash station and safety shower.
- Eye/face protection:** Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.
- Skin protection**
Hand protection: Use protective gloves made of: Polyethylene/Ethylene Vinyl Alcohol (PE/EVAL). Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves.
- Other:** Any specific clothing information provided is based on published literature and manufacturer data. Body protection suitability and breakthrough time will differ depending on the specific use conditions. Clothing to be considered for this material may include sleeves, aprons, pants depending on the use and likelihood of skin contact. Please refer to the hand protection section for material type.
- Respiratory Protection:** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge and full facepiece. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. For high airborne concentrations, use an approved supplied-air respirator. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas warning properties are poor, or if air purifying filter rating may be exceeded.
- Hygiene measures:** Observe good industrial hygiene practices.
- Environmental Controls:** No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical State:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	Sweet, ester
Odor Threshold:	Not determined.
pH:	No data available.
Melting Point	-74 °C
Boiling Point:	125 °C
Flash Point:	27 °C (Tag closed cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	15 hPa (20 °C)
Vapor density (air=1):	4
Specific Gravity:	0,8812 (20 °C)
Solubility(ies)	
Solubility in Water:	5,3 g/l (20 °C)
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Autoignition Temperature:	No data available.
Decomposition Temperature:	(DSC) No exotherm to 400°C
Dynamic Viscosity:	No data available.
Kinematic viscosity:	0,83 mm ² /s (20 °C)
Explosive properties:	No data available.
Oxidizing properties:	No data available.
Other information	
Minimum ignition temperature:	407 °C (ASTM D2155)

SECTION 10: Stability and reactivity

10.1 Reactivity:	None known.
10.2 Chemical stability:	Stable
10.3 Possibility of hazardous reactions:	None known.
10.4 Conditions to avoid:	Heat, sparks, flames.
10.5 Incompatible materials:	Strong oxidizing agents.
10.6 Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	May cause drowsiness or dizziness.
Ingestion:	None known.
Skin contact:	Repeated exposure may cause skin dryness or cracking.
Eye contact:	None known.

11.1 Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

n-butyl acetate Oral LD-50: (Rat): 14.130 mg/kg

Dermal

Product: No data available.

Specified substance(s)

n-butyl acetate Dermal LD-50: (Rabbit): > 16ml/kg

Inhalation

Product: No data available.

Specified substance(s)

n-butyl acetate No data available.

Repeated dose toxicity

Product: No data available.

Specified substance(s)

n-butyl acetate No data available.

Skin corrosion/irritation:

Product: No data available.

Specified substance(s)

n-butyl acetate (Rabbit, 24 h): none

Serious eye damage/eye irritation:

Product: No data available.

Specified substance(s)

n-butyl acetate (Rabbit, 24 h): none

Respiratory or skin sensitization:

Product: No data available.

Specified substance(s) n-butyl acetate	Skin Sensitization:, (Guinea Pig) - non-sensitizing
Mutagenicity	
In vitro Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
In vivo Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Carcinogenicity	
Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Reproductive toxicity	
Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Specific target organ toxicity - single exposure	
Product:	No data available.
Specified substance(s) n-butyl acetate	Narcotic effect.
Specific target organ toxicity - repeated exposure	
Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Aspiration hazard	
Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Other adverse effects:	No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product:	No data available.
Specified substance(s) n-butyl acetate	LC-50 (Fathead Minnow, 96 h): 18 mg/l

Aquatic invertebrates

Product:	No data available.
Specified substance(s) n-butyl acetate	LC-50 (Water Flea, 48 h): 44 mg/l

Chronic Toxicity

Fish

Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.

Aquatic invertebrates

Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.

Toxicity to Aquatic Plants

Product:	No data available.
Specified substance(s) n-butyl acetate	EC-50 (Alga, 72 h): 648 mg/l

12.2 Persistence and degradability

Biodegradation

Product:	No data available.
Specified substance(s) n-butyl acetate	83 % (28 d)

Biological Oxygen Demand:

Product	BOD-5: 1.020 mg/g BOD-20: 1.450 mg/g
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Chemical Oxygen Demand:

Product	No data available.
Specified substance(s) n-butyl acetate	1.010 mg/g

BOD/COD ratio

Product	No data available.
Specified substance(s) n-butyl acetate	72 %

12.3 Bioaccumulative potential

Product:	No data available.
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Specified substance(s)

n-butyl acetate No data available.

12.4 Mobility in soil:

No data available.

Known or predicted distribution to environmental compartments

n-butyl acetate No data available.

12.5 Results of PBT and vPvB assessment:

No data available.

n-butyl acetate

No data available.

12.6 Other adverse effects:

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information:

No data available.

Disposal methods:

Dispose of waste and residues in accordance with local authority requirements. Mix with compatible chemical which is less flammable and incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

European Waste Codes

Comply with requirements of waste disposal legislation and any local authority requirements.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Possible Shipping Description(s):

UN 1123 BUTYL ACETATES
3 III

IMDG - International Maritime Dangerous Goods Code

Possible Shipping Description(s):

UN 1123 BUTYL ACETATES 3 III

IATA

Possible Shipping Description(s):

UN 1123 Butyl acetates 3 III

SECTION 15: Regulatory information

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

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.KE-04179

15.2 Chemical safety assessment: Yes.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Wording of the R-phrases and H-statements in section 2 and 3:

R10 = Flammable.
R66 = Repeated exposure may cause skin dryness or cracking.
R67 = Vapours may cause drowsiness and dizziness.

Flam. Liq. = Flammable liquids
STOT SE = Specific target organ toxicity - single exposure
3 = Category 3
3 = Category 3
H226= Flammable liquid and vapor.

H336= May cause drowsiness or dizziness.

Training information:

No data available.

Issue date:

27.08.2014

SDS No.:

Disclaimer:

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Annex to the extended Safety Data Sheet (eSDS)
Eastman EastaPure(TM) n-Butyl Acetate
150000015940

Content

Exposure scenario I.	Manufacture of substance or use as process chemical or extracting agent within closed or contained systems. Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Exposure scenario II.	Bulk loading (including marine vessel/barge, rail/road car and IBC loading)
Exposure scenario III.	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities
Exposure scenario IV.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use
Exposure scenario V.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use
Exposure scenario VI.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use
Exposure scenario VII.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use
Exposure scenario VIII.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use
Exposure scenario IX.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Consumer use
Exposure scenario X.	Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use
Exposure scenario XI.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use
Exposure scenario XII.	Other consumer uses

Summary

	Process categories [PROC]	Product categories [PC]:	Sector of uses [SU]	Article categories [AC]	Environmental release categories [ERC]
Manufacture of substance or use as process chemical or extracting agent within closed or contained systems. Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC15		SU8 SU9		ERC1
Bulk loading (including marine vessel/barge, rail/road car and IBC loading)	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC9 PROC15		SU8 SU9		ERC1
Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC14 PROC15		SU8 SU10		ERC2

Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use	PROC1 PROC2 PROC3 PROC4 PROC7 PROC5 PROC8a PROC8b PROC10 PROC13 PROC15		SU3 SU17 SU18		ERC4
Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC10 PROC11 PROC13 PROC15 PROC19		SU19 SU22		ERC8a
Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use		PC9a_1 PC9a_2 PC9a_3 PC9a_4	SU21		ERC8a
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use	PROC1 PROC2 PROC3 PROC4 PROC7 PROC8a PROC8b PROC10 PROC13		SU3 SU8 SU9		ERC4
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC10 PROC11 PROC13		SU22		ERC8a
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Consumer use		PC3_1 PC3_2 PC35_1 PC35_2 PC35_3	SU21		ERC8a
Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use	PROC10 PROC15		SU8 SU9		ERC4
Covers the use as a component of cleaning products within closed or contained systems	PROC10 PROC15		SU22		ERC8a

including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use					
Other consumer uses		PC28, PC39	SU21		ERC8a, ERC8d

Exposure scenario I. Manufacture of substance or use as process chemical or extracting agent within closed or contained systems. Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, main tenance and loading (including marine vessel/barge, road/rail car and bulk container).

Section 1: Exposure scenario

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC8a. PROC8b. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC1

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Material transfers, Transport:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).

Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	345.600 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC1: Manufacture of substances

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Soil	Do not apply industrial sludge to natural soils.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	120.000 tonnes/yr
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	400 tonnes/day

Msafe	Daily amount per site: 400 tonnes/day
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Frequency and duration of use: Continuous process:	300 day s/year Emission days (day s/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	0,5 %	0,01 %	0,38 %	ESVOC spERC 1.1.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m ³ /d):	
Discharge rate:	28.800 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample*

collection

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment: *Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC1: Manufacture of substances

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
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Water	0,048 mg/L	0,267	Used EUSES model.	
Seawater	0,058 mg/L	3,2	Used EUSES model.	The RCR values for this compartment are not considered relevant for this scenario as the site is a sufficient distance from the sea.
Freshwater Sediment	0,963 mg/kg dwt	0,982	Used EUSES model.	
Saltwater Sediment	1,15 mg/kg dwt	11,72	Used EUSES model.	The RCR values for this compartment are not considered relevant for this scenario as the site is a sufficient distance from the sea.
Soil	0,07 mg/kg dwt	0,78	Used EUSES model.	
Sewage Treatment Plant	5,75 mg/L	0,162	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>
Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.	
$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$	
<p>m_{spERC}: Substance use rate in spERC E_{ER,spERC}: Efficacy of RMM in spERC F_{release,spERC}: Initial release fraction in spERC DF_{spERC}: dilution factor of STP effluent in river m_{site}: Substance use rate at site E_{ER,site}: Efficacy of RMM at site F_{release,site}: Initial release fraction at site DF_{site}: dilution factor of STP effluent in river</p>	

Exposure scenario II. Bulk loading (including marine vessel/barge, rail/road car and IBC loading)

Section 1: Exposure scenario

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC8a. PROC8b. PROC9. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC1

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Material transfers, Transport:	No other specific measures identified.
Drum and small package filling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).

Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC1: Manufacture of substances

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	120.000 tonnes/yr
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	400 tonnes/day

Msafe	Daily amount per site: 400 tonnes/day
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Frequency and duration of use: Continuous process:	300 day s/year Emission days (days/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	0,01 %	0,001 %	0,001 %	ESVOC spERC 1.1b.v1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m ³ /d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
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PROC1: Use in closed process, no likelihood of exposure General exposures (closed systems), Continuous process, no sampling

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure General exposures (closed systems), Continuous process, with sample collection

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment:	<i>Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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ERC1: Manufacture of substances

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,022 mg/L	0,124	Used EUSES model.	
Seawater	0,002 mg/L	0,123	Used EUSES model.	
Freshwater Sediment	0,447 mg/kg dwt	0,456	Used EUSES model.	
Saltwater Sediment	0,044 mg/kg dwt	0,454	Used EUSES model.	
Soil	0,083 mg/kg dwt	0,915	Used EUSES model.	
Sewage Treatment Plant	0,218 mg/L	0,006	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease,spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease,site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario III. Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities

Section 1: Exposure scenario

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC9. PROC14. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC2

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Mixing operations (open systems):	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Material transfers, Transport:	No other specific measures identified.
Drum and small package filling:	No other specific measures identified.
Production of preparations or articles by tableting, compression, extrusion, pelletisation:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m³/d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC2: Formulation of preparations (mixtures)

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	4.000 tonnes/y r
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	13,33 tonnes/day

Msafe	Daily amount per site: 13,33 tonnes/day
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Frequency and duration of use: Continuous process:	300 day s/year Emission days (day s/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	2,5 %	0,01 %	0,02 %	ESVOC spERC 2.2.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC1: Use in closed process, no likelihood of exposure General exposures (closed systems), Continuous process, no sampling

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe	

			use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks

Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment:

Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

ERC2: Formulation of preparations (mixtures)

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,015 mg/L	0,083	Used EUSES model.	
Seawater	0,002 mg/L	0,307	Used EUSES model.	
Freshwater Sediment	0,301 mg/kg dwt	0,083	Used EUSES model.	
Saltwater Sediment	0,03 mg/kg dwt	0,306	Used EUSES model.	
Soil	0,065 mg/kg dwt	0,724	Used EUSES model.	
Sewage Treatment Plant	0,145 mg/L	0,004	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health

Confirm that RMMs and OCs are as described or of equivalent efficiency..

4.2. Environment

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

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

m_{spERC}: Substance use rate in spERC
E_{ER,spERC}: Efficacy of RMM in spERC
F_{release,spERC}: Initial release fraction in spERC
DF_{spERC}: dilution factor of STP effluent in river
m_{site}: Substance use rate at site
E_{ER,site}: Efficacy of RMM at site
F_{release,site}: Initial release fraction at site
DF_{site}: dilution factor of STP effluent in river

Exposure scenario IV. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use

Section 1: Exposure scenario

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment. SU18: Manufacture of furniture
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC7. PROC5. PROC8a. PROC8b. PROC10. PROC13. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC4

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Spraying:	Provide extract ventilation to points where emissions occur.
Mixing operations (open systems):	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Material transfers, Transport:	No other specific measures identified.
Rolling, Brushing:	No other specific measures identified.
Dipping, immersion and pouring:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	5.000 tonnes/yr
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	16,66 tonnes/day

Msafe	Daily amount per site: 16,66 tonnes/day
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Frequency and duration of use: Continuous process:	300 days/s/year Emission days (days/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	0,98 %	0 %	0,02 %	ESVOC spERC 4.3a.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m ³ /d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
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PROC1: Use in closed process, no likelihood of exposure General exposures (closed systems), Continuous process, no sampling

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC7: Industrial spraying *Spraying*

	Exposure level	RCR	Method	Remarks
Inhalation	60,5 mg/m ³	0,126	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,126	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment:

Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

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

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,019 mg/L	0,103	Used EUSES model.	
Seawater	0,002 mg/L	0,103	Used EUSES model.	
Freshwater Sediment	0,374 mg/kg dwt	0,381	Used EUSES model.	
Saltwater Sediment	0,037 mg/kg dwt	0,379	Used EUSES model.	
Soil	0,073 mg/kg dwt	0,811	Used EUSES model.	
Sewage Treatment Plant	0,181 mg/L	0,005	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health

Confirm that RMMs and OCs are as described or of equivalent efficiency..

4.2. Environment

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

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$$

m_{spERC}: Substance use rate in spERC
 E_{ER,spERC}: Efficacy of RMM in spERC
 F_{release,spERC}: Initial release fraction in spERC
 DF_{spERC}: dilution factor of STP effluent in river
 m_{site}: Substance use rate at site
 E_{ER,site}: Efficacy of RMM at site
 F_{release,site}: Initial release fraction at site
 DF_{site}: dilution factor of STP effluent in river

Exposure scenario V. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use

Section 1: Exposure scenario

Sector(s) of Use	SU19: Building and construction work SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC10. PROC11. PROC13. PROC15. PROC19.
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Mixing operations (open systems):	Limit the substance content in the product to 25 %.
Equipment cleaning and maintenance:	Limit the substance content in the product to 25 %.
Material transfers, Transport:	No other specific measures identified.
Rolling, Brushing:	Limit the substance content in the product to 25 %.
Spraying:	Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.
Dipping, immersion and pouring:	Limit the substance content in the product to 25 %.
Laboratory activities:	No other specific measures identified.
Hand application - finger paints, pastels, adhesives:	Limit the substance content in the product to 25 %.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m³/d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Daily amount per site	0,00055 tonnes/day
Amounts used: Fraction of main source to local environment	0,0005

Frequency and duration of use: Continuous process:	365 days/year Dispersive use.
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	98 %	1 %	1 %	ESVOC spERC 8.3b.v1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	RCR	Method	Remarks
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Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC11: Non industrial spraying *Spraying*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC19: Hand-mixing with intimate contact and only PPE available *Hand application - finger paints, pastels, adhesives*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

3.2. Environment:

Used EUSES model. When the recommended risk management measures (HMMS) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,00054 mg/L	0,003	Used EUSES model.	
Seawater	0,000047 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg dwt	0,011	Used EUSES model.	
Saltwater Sediment	0,00094 mg/kg dwt	0,01	Used EUSES model.	
Soil	0,0003 mg/kg dwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,181 mg/L	0,0001	Used EUSES model.	

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>
<p>Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.</p>	
$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$ <p> m_{spERC}: Substance use rate in spERC E_{ER,spERC}: Efficacy of RMM in spERC F_{release,spERC}: Initial release fraction in spERC DF_{spERC}: dilution factor of STP effluent in river m_{site}: Substance use rate at site E_{ER,site}: Efficacy of RMM at site F_{release,site}: Initial release fraction at site DF_{site}: dilution factor of STP effluent in river </p>	

Exposure scenario VI. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use

Section 1: Exposure scenario

Sector(s) of Use	SU21: Consumer uses: Private households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario	Risk management measures (RMM)
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PC9a_1: Waterborne latex wall paint	Risk management measures (RMM)
	Covers concentrations up to1, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	Covers skin contact area up to428 cm ²
	For each use event, covers use amounts up to2760, grams
	Covers use in room size of20, m ³
	Covers exposure up to2.2, hr/event

PC9a_2: Solvent rich, high solid, water borne paint	Risk management measures (RMM)
	Covers concentrations up to4, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	Covers skin contact area up to428 cm ²
	For each use event, covers use amounts up to744, grams
	Covers use in room size of20, m ³
	Covers exposure up to2.2, hr/event

PC9a_3: Aerosol spray can	Risk management measures (RMM)
	Covers concentrations up to17, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	For each use event, covers use amounts up to215, grams
	Covers use in room size of34, m ³

	Covers exposure up to0.33, hr/ev ent
PC9a_4: Removers (paint-, glue-, wall paper-, sealant-remover)	Risk management measures (RMM)
	Covers concentrations up to6, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	Covers skin contact area up to857.5, cm ²
	For each use event, covers use amounts up to491, grams
	Covers use in room size of20, m ³
	Covers exposure up to2, hr/ev ent

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Prevent exposure of soil using protective covers.
Water	Do not pour down the drain.

Amounts used: Daily amount per site	0,00027 tonnes/day
Amounts used: Fraction of main source to local environment	0,0005

Frequency and duration of use: Continuous process:	365 days/year Dispersive use.
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	98,5 %	0,5 %	1 %	ESVOC spERC 8.3c.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m ³ /d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PC9a_1: Waterborne latex wall paint

	Exposure level	RCR	Method	Remarks
Inhalation	77,26 mg/m ³	0,75	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,75	Used CHESAR model.	

PC9a_2: Solvent rich, high solid, water borne paint

	Exposure level	RCR	Method	Remarks
Inhalation	77,62 mg/m ³	0,76	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,76	Used CHESAR model.	

PC9a_3: Aerosol spray can

	Exposure level	RCR	Method	Remarks
Inhalation	11,66 mg/m ³	0,001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,11	Used CHESAR model.	

PC9a_4: Removers (paint-, glue-, wall paper-, sealant-remover)

	Exposure level	RCR	Method	Remarks
Inhalation	71,48 mg/m ³	0,7	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,7	Used CHESAR model.	

3.2. Environment:	<i>Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000522 mg/L	0,003	Used EUSES model.	
Seawater	0,000045 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000907 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000089 mg/kg dwt	0,00098	Used EUSES model.	
Sewage Treatment Plant	0,000147 mg/L	0,0001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>
<p>Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.</p>	
$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$ <p> mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease,spERC: Initial release fraction in spERC DFspERC: dilution factor of STP effluent in river msite: Substance use rate at site EER,site: Efficacy of RMM at site Frelease,site: Initial release fraction at site DFsite: dilution factor of STP effluent in river </p>	

Exposure scenario VII. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use

Section 1: Exposure scenario

Sector(s) of Use	SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC7. PROC8a. PROC8b. PROC10. PROC13.
Name of contributing environmental scenario and corresponding ERC	ERC4

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Spraying:	Provide extract ventilation to points where emissions occur.
Equipment cleaning and maintenance:	No other specific measures identified.
Material transfers, Transport:	No other specific measures identified.
Rolling, Brushing:	No other specific measures identified.
Dipping, immersion and pouring:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m³/d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	100 tonnes/day
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	5 tonnes/day

Msafe	Daily amount per site: 5 tonnes/day
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Frequency and duration of use: Continuous process:	300 day s/year Emission days (day s/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	30 %	0 %	0,01 %	ESVOC spERC 4.4a.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	

Various Routes		0,0001	Used CHESAR model.	
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PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC7: Industrial spraying *Spraying*

	Exposure level	RCR	Method	Remarks
Inhalation	60,5 mg/m ³	0,126	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,126	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	

Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.
Various Routes		0,504	Used CHESAR model.

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

3.2. Environment:

Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

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

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,003 mg/L	0,018	Used EUSES model.	
Seawater	0,000316 mg/L	0,018	Used EUSES model.	
Freshwater Sediment	0,065 mg/kg dwt	0,066	Used EUSES model.	
Saltwater Sediment	0,006 mg/kg dwt	0,065	Used EUSES model.	
Soil	0,014 mg/kg dwt	0,151	Used EUSES model.	
Sewage Treatment Plant	0,027 mg/L	0,000764	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health *Confirm that RMMs and OCs are as described or of equivalent efficiency..*

4.2. Environment *Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>), [ries-libraries.html](http://cefic.org/en/reach-for-industries-libraries.html)).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$$

m_{spERC}: Substance use rate in spERC
E_{ER,spERC}: Efficacy of RMM in spERC
F_{release,spERC}: Initial release fraction in spERC
DF_{spERC}: dilution factor of STP effluent in river
m_{site}: Substance use rate at site
E_{ER,site}: Efficacy of RMM at site
F_{release,site}: Initial release fraction at site
DF_{site}: dilution factor of STP effluent in river

Exposure scenario VIII. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use

Section 1: Exposure scenario

Sector(s) of Use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC8a. PROC8b. PROC10. PROC11. PROC13.
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
General exposures (closed systems), Use in contained batch processes:	No other specific measures identified.
Bulk transfers, internal:	No other specific measures identified.
Equipment cleaning and maintenance:	Limit the substance content in the product to 25 %.
Material transfers, Transport:	No other specific measures identified.
Rolling, Brushing:	Limit the substance content in the product to 25 %.
Spraying:	Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.
Dipping, immersion and pouring:	Limit the substance content in the product to 25 %.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m³/d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Daily amount per site	0,00027 tonnes/day
Amounts used: Fraction of main source to local environment	0,0005

Frequency and duration of use: Continuous process:	365 days/year Dispersive use.
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	2 %	0 %	0,001 %	ESVOC spERC 8.4b.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m ³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) *General exposures (closed systems), Use in contained batch processes*

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC11: Non industrial spraying *Spraying*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

3.2. Environment:

Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000507 mg/L	0,003	Used EUSES model.	
Seawater	0,000044 mg/L	0,002	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,01	Used EUSES model.	
Saltwater Sediment	0,000878 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000034 mg/kg dwt	0,00038	Used EUSES model.	
Sewage Treatment Plant	0,000001 mg/L	0,00001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health

Confirm that RMMs and OCs are as described or of equivalent efficiency..

4.2. Environment

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

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease,spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease,site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario IX. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Consumer use

Section 1: Exposure scenario

Sector(s) of Use	SU21: Consumer uses: Private households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario	Risk management measures (RMM)
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PC3_1: Air care, instant action (aerosol sprays)	Risk management measures (RMM)
	Covers concentrations up to50, %
	Covers use up to ...365, days per year
	Covers use up to1, times/day
	For each use event, covers use amounts up to0.1, grams
	Covers use in room size of20, m3
	Covers exposure up to0.25, hr/event

PC3_2: Air care, continuous action (solid and liquid)	Risk management measures (RMM)
	Covers concentrations up to10, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	Covers skin contact area up to35.75 cm2
	For each use event, covers use amounts up to0.48 g
	Covers use in room size of20, m3
	Covers exposure up to8 hours, per event

PC35_1: Laundry and dish washing products	Risk management measures (RMM)
	Covers concentrations up to5, %
	Covers use up to ...365, days per year
	Covers use up toone time per day
	Covers skin contact area up to857.5, cm2
	For each use event, covers use amounts up to15, grams

	Covers use in room size of20, m3
	Covers exposure up to0.5, hr/ev ent

PC35_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	Risk management measures (RMM)
	Covers concentrations up to5, %
	Covers use up to ...365, day s per year
	Covers use up toone time per day
	Covers skin contact area up to857.5, cm2
	For each use ev ent, cov ers use amounts up to27, grams
	Covers use in room size of20, m3
	Covers exposure up to0.33, hr/ev ent

PC35_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	Risk management measures (RMM)
	Covers concentrations up to15, %
	Covers use up to ...365, day s per year
	Covers use up toone time per day
	Covers skin contact area up to428 cm2
	For each use ev ent, cov ers use amounts up to35, grams
	Covers use in room size of20, m3
	Covers exposure up to0.17 hours

2.2.Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m³/d):	18.000 m3/d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Prevent exposure of soil using protective covers.
Water	Do not pour down the drain.

Amounts used: Daily amount per site	0,00027 tonnes/day
Amounts used: Fraction of main source to local environment	0,0005

Frequency and duration of use: Continuous process:	365 day s/year Emission day s (day s/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	95 %	2,5 %	2,5 %	ESVOC spERC 8.4c.v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	

Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMS (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMS) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PC3_1: Air care, instant action (aerosol sprays)

	Exposure level	RCR	Method	Remarks
Inhalation	0,02 mg/kg/day	0	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0	Used CHESAR model.	

PC3_2: Air care, continuous action (solid and liquid)

	Exposure level	RCR	Method	Remarks
Inhalation	0,17 mg/m ³	0	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0	Used CHESAR model.	

PC35_1: Laundry and dish washing products

	Exposure level	RCR	Method	Remarks
Inhalation	0,67 mg/m ³	0,01	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,01	Used CHESAR model.	

PC35_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

	Exposure level	RCR	Method	Remarks
Inhalation	0,84 mg/m ³	0,01	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,01	Used CHESAR model.	

PC35_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

	Exposure level	RCR	Method	Remarks
Inhalation	1,77 mg/m ³	0,02	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,02	Used CHESAR model.	

3.2. Environment:	<i>Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000544 mg/L	0,003	Used EUSES model.	
Seawater	0,000048 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg wwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000952 mg/kg wwt	0,01	Used EUSES model.	
Soil	0,000171 mg/kg wwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,000368 mg/L	0,00001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency.</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$$

m_{spERC}: Substance use rate in spERC
 E_{ER,spERC}: Efficacy of RMM in spERC
 F_{release,spERC}: Initial release fraction in spERC
 DF_{spERC}: dilution factor of STP effluent in river
 m_{site}: Substance use rate at site
 E_{ER,site}: Efficacy of RMM at site
 F_{release,site}: Initial release fraction at site
 DF_{site}: dilution factor of STP effluent in river

Exposure scenario X. Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use

Section 1: Exposure scenario

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
List of names of contributing worker scenarios and corresponding PROCs	PROC10. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC4

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
Rolling, Brushing:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none

Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Annual amount per site	1 tonnes/yr
Amounts used: Fraction of EU tonnage used in region:	1
Amounts used: Daily amount per site	0,5 tonnes/day

Msafe	Daily amount per site: 0,05 tonnes/day
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Frequency and duration of use: Continuous process:	300 day s/y ear Emission days (day s/year):
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	300	2,5 %	0,01 %	2 %	ESVOC spERC 4.24v 1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment:	<i>Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,006 mg/L	0,033	Used EUSES model.	
Seawater	0,000588 mg/L	0,033	Used EUSES model.	
Freshwater Sediment	0,119 mg/kg dwt	0,121	Used EUSES model.	
Saltwater Sediment	0,012 mg/kg dwt	0,12	Used EUSES model.	
Soil	0,02 mg/kg dwt	0,225	Used EUSES model.	
Sewage Treatment Plant	0,054 mg/L	0,002	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>
Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.	
$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$	
<p>m_{spERC}: Substance use rate in spERC E_{ER,spERC}: Efficacy of RMM in spERC F_{release,spERC}: Initial release fraction in spERC DF_{spERC}: dilution factor of STP effluent in river m_{site}: Substance use rate at site E_{ER,site}: Efficacy of RMM at site F_{release,site}: Initial release fraction at site DF_{site}: dilution factor of STP effluent in river</p>	

Exposure scenario XI. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use

Section 1: Exposure scenario

Sector(s) of Use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
List of names of contributing worker scenarios and corresponding PROCs	PROC10. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk management measures (RMM)
Rolling, Brushing:	Limit the substance content in the product to 25 %.
Laboratory activities:	No other specific measures identified.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
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Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
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Organisational measures to prevent/limit release from site:	none
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Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.
Water	Pre vent environmental discharge consistent with regulatory requirements.

Amounts used: Daily amount per site	0,000001 tonnes/day
Amounts used: Fraction of main source to local environment	0,0005

Frequency and duration of use: Continuous process:	365 days/s/year Dispersive use.
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Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	50 %	0 %	50 %	ESVOC spERC 8.17.v1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m³/d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 89,1 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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PROC10: Roller application or brushing *Rolling, Brushing*

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC15: Use as laboratory reagent *Laboratory activities*

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

3.2. Environment:	<i>Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.</i>
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ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000507 mg/L	0,003	Used EUSES model.	

Seawater	0,000044 mg/L	0,002	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,01	Used EUSES model.	
Saltwater Sediment	0,000879 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000035 mg/kg dwt	0,0004	Used EUSES model.	
Sewage Treatment Plant	0,000004 mg/L	0,00001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency..</i>
4.2. Environment	<i>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).</i>
Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.	
$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$	
<p>m_{spERC}: Substance use rate in spERC E_{ER,spERC}: Efficacy of RMM in spERC F_{release,spERC}: Initial release fraction in spERC DF_{spERC}: dilution factor of STP effluent in river m_{site}: Substance use rate at site E_{ER,site}: Efficacy of RMM at site F_{release,site}: Initial release fraction at site DF_{site}: dilution factor of STP effluent in river</p>	

Exposure scenario XII. Other consumer uses

Section 1: Exposure scenario

Sector(s) of Use	SU21: Consumer uses: Private households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and corresponding ERC	ERC8a ERC8d

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario	Risk management measures (RMM)
PC28, PC39: Perfumes, Fragrances, Cosmetics, personal care products	Risk management measures (RMM)
	According to article 14 in the REACH regulation, human health need not be assessed.

2.2. Control of environmental exposure

Risk management measures (RMM)	Note: 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.
Technical conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk management	
Flow rate of receiving surface water (m ³ /d):	18.000 m ³ /d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Prevent exposure of soil using protective covers.
Water	Do not pour down the drain.

Amounts used: Daily amount per site	0,00027 tonnes/day
Amounts used: Fraction of EU tonnage used in region:	0,0005

Frequency and duration of use: Continuous	365 days/year Emission days (day s/year):
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process:					
Other given operational conditions affecting environmental exposure					
type	Emission days (days/year):	Emission factors			Remarks
		Air	Soil	Water	
Continuous release.	365	95 %	2,5 %	2,5 %	ESVOC spERC 8.16.v1

Conditions and measures related to municipal sewage treatment plant	
Size of municipal sewage system/treatment plant (m ³ /d):	
Discharge rate:	2.000 m ³ /d
Total efficiency of removal from wastewater after onsite and off site (domestic treatment plant) RMMs (%): 88,3 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment:		
Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation

3.1. Health:	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
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PC28, PC39: Perfumes, Fragrances, Cosmetics, personal care products
none

3.2. Environment:	Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
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ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000544 mg/L	0,003	Used EUSES model.	
Seawater	0,000048 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg wwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000952 mg/kg wwt	0,01	Used EUSES model.	
Soil	0,000368 mg/kg wwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,000171 mg/L	0,00001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario

4.1 Health	Confirm that RMMs and OCs are as described or of equivalent efficiency..
4.2. Environment	Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{\text{spERC}} * (1 - E_{\text{ER,spERC}}) * F_{\text{release,spERC}}}{DF_{\text{spERC}}} \geq \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease, spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease,site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river