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

1.1. Product identifier

Chemical description : Turpentine .

* Type of product : UVCB substance .

Reach registration number : 01-2119553060-53

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

* Identified use(s) : See table on the front page of the annex.

* Use(s) advised against : This product is not recommended for any industrial, professional or consumer use other than identified in table on the front page of the annex.
Not for use in ornamental articles, in tricks and jokes and in games (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (3. Liquid substances or mixtures, which are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F, (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10, (c) hazard class 4.1, (d) hazard class 5.1).
Not for use in aerosol dispensers for entertainment and decorative purposes (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of wether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not).

1.3. Details of the supplier of the safety data sheet

Company identification : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK
TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77/57/11
E-MAIL: info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

1.4. Emergency telephone number

Emergency phone number : Belgium : Antipoison Center - Brussels
TEL: +32(0)70/245.245

The Netherlands : National Poisoning Information Center - Bilthoven
TEL: +31(0)30/274.88.88 (Only for the purpose of informing medical personnel in cases of acute intoxications)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

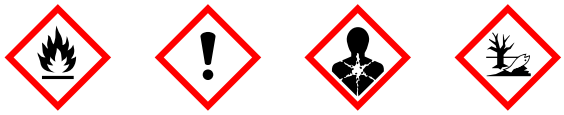
Flammable liquids - Category 3 - Warning (Flam. Liq. 3; H226)
Acute toxicity, oral - Category 4 - Warning (Acute Tox. 4, oral; H302)
Aspiration hazard - Category 1 - Danger (Asp. Tox. 1; H304)
Acute toxicity, dermal - Category 4 - Warning (Acute Tox. 4, dermal; H312)
Skin irritation - Category 2 - Warning (Skin Irrit. 2; H315)
Skin sensitisation - Category 1 - Warning (Skin Sens. 1; H317)
Eye irritation - Category 2 - Warning (Eye Irrit. 2; H319)
Acute toxicity, inhalation - Category 4 - Warning (Acute Tox. 4, inhalation; H332)
Hazardous to the aquatic environment - Chronic hazard - Category 2 (Aquatic Chronic 2; H411)

SECTION 2. Hazards identification (continued)

2.2. Label elements

Label in accordance with Regulation (EC) No 1272/2008

- Dangerous ingredient(s) : Turpentine
- Hazard pictogram(s)



- Signal word : Danger
- Hazard statements : H226 - Flammable liquid and vapour. H302 - Harmful if swallowed. H304 - May be fatal if swallowed and enters airways. H312 - Harmful in contact with skin. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H319 - Causes serious eye irritation. H332 - Harmful if inhaled. H411 - Toxic to aquatic life with long lasting effects.
- Precautionary statements
  - Prevention : P260 - Do not breathe dust/fume/gas/mist/vapours/spray. P280 - Wear protective gloves/protective clothing/eye protection/face protection.
  - Response : P301+P310+P331 - IF SWALLOWED: Immediately call a POISON CENTER/ doctor/… Do NOT induce vomiting. P302+P352 - IF ON SKIN : Wash with plenty of soap and water. P333+P313 - If skin irritation or rash occurs: Get medical advice/ attention.
  - Disposal considerations : P501 - Dispose of this material and its container to hazardous or special waste collection point.

2.3. Other hazards

* Physical/chemical hazards : Vapor mixes readily with air.
May form peroxides.
May generate static electric discharges.

Hazards for the health : A health dangerous concentration in the air will not or very slowly be reached by evaporation of this substance at app. 20°C; by spraying much faster.

Hazards for the environment : No additional hazard. This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).

Hazards for the safety : At or above flash point, available vapours may burn in open or explode if confined when mixed with air and exposed to ignition source.

SECTION 3. Composition/information on ingredients

3.2. Mixtures

	Name component(s)		Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
*	Turpentine	:	> 99 %	8006-64-2	232-350-7	650-002-00-6	01-2119553060-53	Flam. Liq. 3; H226 Acute Tox. 4 (oral); H302 Asp. Tox. 1; H304 Acute Tox. 4 (skin); H312 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4 (inhal); H332 Aquatic Chronic 2; H411

*

The full text of the (EU)H-statements is in section 16.
Reportable hazardous component(s) contained in UVCB and/or multi-constituent substance(s) complying with the classification and/or with an exposure limit Turpentine

SECTION 4. First aid measures

4.1. Description of first aid measures

General : In case of doubt or persistent symptoms, call a physician.
Never give anything by mouth to an unconscious person.

First Aid Measures

- Inhalation : Remove victim into fresh air.
Allow the affected person to rest in semi-sitting position.
If not breathing, give artificial respiration.
Take the patient immediately to the hospital.

- Skin Contact : Remove contaminated clothing.
Rinse skin immediately with mild soap and plenty of water. (shower if necessary).
Consult a doctor.

* - Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses.
Consult eye doctor.
Keep rinsing or dripping the eye during transport.

* - Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Immediately call a POISON CENTER or doctor/physician.

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

See section 11.

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

For specialist advice doctors should contact the NVIC or the Belgian Poison center.

SECTION 5. Firefighting measures

5.1. Extinguishing media

Extinguishing Media

- Suitable : Extinguishing powder , Foam , Carbon dioxide (CO2) , Water spray .
- Insuitable : Heavy water stream .

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards : Fire may liberate carbon oxides (CO) and smoke.

5.3. Advice for firefighters

Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.

Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions : Eliminate every possible source of ignition (open fire, sparks, smoking, ...).
Evacuate all personnel immediately and ventilate area.
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

6.2. Environmental precautions

Environmental Precautions : Shut off leaks if without risks.
Dike in the spilled product as much as possible with inert material.
Prevent entry of product in public water, sewers or soil.
Notify authorities if product enters sewers or public waters.

SECTION 6. Accidental release measures (continued)

6.3. Methods and material for containment and cleaning up

Methods for Cleaning Up : Collect the spillage in closable, suitable disposal containers.
Eventual remaining residues may be washed down with soap solution or water.
Collect rinsing water. .

6.4. Reference to other sections

For personal protection, see section 8.
For the removal of the waste product, see section 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Handling : Pay attention : SKIN ABSORPTION !
AVOID FOG TRANSFORMATION !
Avoid breathing vapour and contact with skin, eyes and clothing.
Wear recommended personal protective equipment. (See section 8)
When using, do not eat, drink or smoke.
Wash hands before and after working with the product.
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep only in the original, safely locked container in a cool, well ventilated and fireproof place.
All dangerous products should be placed on a drip tray or should be barreled.
Keep away from : Oxidizing agents .

* Protection against Fire and Explosion : Remove all sources of ignition (open fire, sparks, smoking, ...).
With a temperature equal to or higher than the flash point, the mixture steam-air may create a highly flammable and explosive mixture.
Do not use compressed air to either agitate or transfer contents of storage containers (tanks) / shipping drums containing this material.
Use special care to avoid static electric discharges.
Use explosionproof equipment.
Sufficiently earthen.

Packaging Material : Coated steel .

* Insuitable Packaging Material : Rubber , Synthetic material .

7.3. Specific end use(s)

For identified uses, see subsection 1.2 and/or exposure scenarios.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

* Occupational Exposure Limits : Turpentine : Limit value (BE) : 20 ppm (2014)

DNELs :
- Turpentine : Worker, acute - local effects, dermal : 161 µg/cm²
- Turpentine : Worker, acute - systemic effects, dermal : 25 mg/kg bw/day
- Turpentine : Worker, long-term - systemic effects, inhalation : 5,98 mg/m²
- Turpentine : Consumer, acute - local effects, dermal : 81 µg/cm³
- Turpentine : Consumer, long-term - systemic effects, inhalation : 1,06 mg/m²
- Turpentine : Consumer, long-term - systemic effects, oral : 0,31 mg/kg bw/day

PNECs :
- Turpentine : Fresh water : 8,8 µg/l
- Turpentine : Marine water : 0,88 µg/l
- Turpentine : Fresh water sediment : 2,27 mg/kg
- Turpentine : Marine water sediment : 0,227 mg/kg
- Turpentine : Soil : 0,45 mg/kg

SECTION 8. Exposure controls/personal protection (continued)

• Turpentine : Sewage treatment plant : 6,6 mg/l
• Turpentine : Oral : 1,35 mg/kg

8.2. Exposure controls

	Engineering Measures	: Ventilation , Local exhaust .
	Personal Protection Equipment	
	- Respiratory protection	: CE-approved mask for organic vapours and solvents (type A, brown).
	- Skin protection	: Suitable protective clothing .
*	- Hand protection	: Suitable material for safety gloves (EN 374): The suitability of the gloves and the breakthrough time for a specific workplace should be discussed with the producers of the protective gloves. - material : Nitril rubber - thickness : No data available - breakthrough time : No data available .
	- Eye/Face protection	: Closed safety glasses or face shield.
	Environmental exposure controls	: See sections 6, 7, 12 and 13.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

	Physical State (20°C)	: Liquid .
	Form/Colour	: Clear , Colourless .
	Odour	: Resinous odor .
	Odour threshold	: No data available.
	pH value	: Not applicable.
*	Melting/Freezing point	: -60 °C
*	Boiling Point/Range (1013 hPa)	: 154 - 170 °C
*	Flash point	: 34 °C
	Evaporation rate	: No data available.
	Explosion limits in air	: 0,8 - 6,0 vol.%
*	Vapour pressure (20°C)	: 5,2 kPa
	Vapour density	: 4,69
*	Relative vapour density (air=1)	: No data available.
*	Relative density of saturated vapour/air mixture (air=1)	: 1,02
*	Relative density (water=1)	: 0,9
*	Bulk density	: 0,600 g/ ml
*	Solubility in water	: 0,03 g/ 100ml
*	Log P Octanol/Water (20°C)	: 4,49
*	Auto-ignition temperature	: 270 °C
	Minimum ignition energy	: No data available.
	Decomposition temperature	: No data available.
*	Viscosity (25°C)	: 1,5 mPas (Dynamic)
	Explosive properties	: No chemical groups associated with explosive properties .
	Oxidizing properties	: No chemical groups associated with oxidizing properties .

9.2. Other information

*	Specific leading	: 22 pS/m

SECTION 9. Physical and chemical properties (continued)

* % Volatiles (by weight) : > 99

SECTION 10. Stability and reactivity

10.1. Reactivity

Reactivity : Reacts violently with oxidizing agents.

10.2. Chemical stability

Stability : Because this oil deteriorates upon keeping, by ozonizing and family resinifying, it should not be kept long before using. .

10.3. Possibility of hazardous reactions

* Hazardous reactions : Reacts violently with: . Chlorine Calcium hypochlorite , Chromic acid , Tin II chloride , Hexachloromelamine and trichloromelamine .

10.4. Conditions to avoid

Conditions to avoid : High temperatures .

10.5. Incompatible materials

Materials to avoid : Oxidizing agents , Calcium hypochlorite , Chlorine , Chromic acid , Tin II chloride , Hexachloromelamine and trichloromelamine .

10.6. Hazardous decomposition products

Hazardous Decomposition Products : Carbon oxides .

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

* - Inhalation : Harmful if inhaled.
Inhalation of vapor/fumes can cause breathing difficulties. (Lung oedema.)
The product may cause central nervous system depression.
Symptoms include: Sore throat , Cough , Difficulty in breathing , Headache , Dizziness , Nausea , Chest pain , Drowsiness .
• Turpentine : LC50 (Rat, inhalation, 4 h) : 13,7 mg/l (Air; OECD Guideline 403)

* - Skin contact : Harmful in contact with skin. Product is being absorbed through the skin.
Symptoms include: Redness , Pain .
• Turpentine : LD50 (Rabbit, dermal) : > 2000 mg/kg (OECD Guideline 402)

* - Ingestion : Harmful if swallowed.
After swallowing, some drops of liquid can enter the longs (aspiration), which may cause pneumonia.
Symptoms include: Sore throat , Cough , Abdominal pain , Stomachache , Muscle weakness , Cramps , Drowsiness , Unconsciousness .
• Turpentine : LD50 (Rat, oral) : > 500 mg/kg (OECD Guideline 423)

* Skin corrosion/irritation : Causes skin irritation.
Long and frequent contact may cause oversensitive reactions.
Intensive skin contact may cause oversensitive eczema.

Serious eye damage/irritation : Causes serious eye irritation.

* Aspiration hazard : May be fatal if swallowed and enters airways.
Symptoms of lungoedema mostly reveal after a few hours, intensified by physical effort.

Respiratory or skin sensitisation : May cause an allergic skin reaction.

Carcinogenicity : Not listed as carcinogenic .

SECTION 11. Toxicological information (continued)

Mutagenicity	: Not listed as mutagenic .
Reproductive toxicity	: Not listed for reproductive toxicity .
Specific target organ toxicity - single exposure	: To human : Listed not for organ toxicity . For animals : No effects known.
Specific target organ toxicity - repeated exposure	: To human : Listed not for organ toxicity . For animals : May cause damage to kidney and bladder.

SECTION 12. Ecological information

12.1. Toxicity

* Ecotoxicity : • Turpentine : LC50 (Fish, 96 h) : 29 mg/l (Danio rerio) (OECD Guideline 203)
• Turpentine : EC50 (Algae, 72 h) : 17,1 mg/l (Desmodesmus subspicatus) (OECD Guideline 201)
• Turpentine : EC50 (Daphnia magna, 48 h) : 8,8 mg/l (OECD Guideline 202)
• Turpentine : NOEC (Algae) : 10 mg/ml

12.2. Persistence and degradability

Persistence and degradability : • Turpentine : Persistence and degradability : Readily biodegradable .

12.3. Bioaccumulative potential

Bioaccumulation : • Turpentine : Bioaccumulation : Bioaccumulation is possible.

12.4. Mobility in soil

* Mobility : • Turpentine : Mobility : Low mobility in most soils.

12.5. Results of PBT and vPvB assessment

Evaluation : • Turpentine : PBT/vPvB : No

12.6. Other adverse effects

Photochemical ozone creation potential	: No data available.
Ozone depletion potential	: No data available.
Endocrine disrupting potential	: No data available.
Global warming potential	: No data available.

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/Unused products	: The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
European list of waste products	: XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See Decision 2001/118/EC.
Removal contaminated packaging	: Packing is to be used exclusively for the packing of this product. After use, empty and close the packing very carefully. In case of returned packing, the empty packing can be offered back to the supplier.

SECTION 14. Transport information

14.1. UN number

UN Number : 1299

SECTION 14. Transport information (continued)

14.2. UN proper shipping name

*	ADR/RID Name	: UN 1299 Turpentine, 3, III, (D/E)
	ADN Name	: UN 1299 Turpentine , 3, III
	IMDG Name	: UN 1299 Turpentine , 3, III, (34°C), MARINE POLLUTANT
*	IATA Name	: UN 1299 Turpentine , 3, III

14.3. Transport hazard classe(s)

Class : 3

14.4. Packing group

Packaging Group : III

14.5. Environmental hazards

Environmentally hazard : Yes
Marine pollutant : Yes

14.6. Special precautions for user

Danger number : 30
Hazard Label(s) : 3
EmS-N° : F-E , S-E

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Type ship : No data available.
Pollution category : No data available.

SECTION 15. Regulatory information

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

NFPA n° : 1-3-0

Relevant EU Rule(s) : Directive 96/82/EC of the Council of 9 December 1996 on the control of major-accident hazards involving dangerous substances
Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
Directive 1999/13/EC of the Council of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations
Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

* National regulations

- Belgium

* - Germany : WGK : No data available.

* - Netherlands : Water damaging : A
Decontamination exertion : 3

SECTION 15. Regulatory information (continued)

15.2. Chemical Safety Assessment

* A chemical safety assessment has been carried out for the material.

SECTION 16. Other information

* This safety data sheet has been drawn up in accordance with Regulation (EC) No 1907/2006 and the corresponding current changes.
This safety data sheet is exclusively made for industrial/professional use.

* Has changed compared to previous revision.

*	Changes	: General revision .
*	Sources of used key data	: The information contained herein is based on the present state of our knowledge (Producer(s) , Chemical cards , ...) See also on the webaddress: http://apps.echa.europa.eu/registered/registered-sub.aspx#search
	(EU)H-statement(s)	: H226 - Flammable liquid and vapour. H302 - Harmful if swallowed. H304 - May be fatal if swallowed and enters airways. H312 - Harmful in contact with skin. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H319 - Causes serious eye irritation. H332 - Harmful if inhaled. H411 - Toxic to aquatic life with long lasting effects.
*	Classification procedure	: Flam Liq. 3; H226 - Based on test data Acute Tox. 4, oral; H302 - Calculation method Asp. Tox. 1; H304 - Additivity method Acute Tox. 4, dermal; H312 - Calculation method Skin Irrit. 2; H315 - Additivity method Skin Senz. 1; H317 - Additivity method Eye Irrit. 2; H319 - Additivity method Aquatic Chronic 2; H411 - Calculation method
*	List of abbrevations and acronyms	: Acute Tox. 4, oral : Acute toxicity, oral - Category 4 Acute Tox. 4, dermal : Acute toxicity, dermal - Category 4 Acute Tox. 4, inhalation : Acute toxicity, inhalation - Category 4 ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road Aquatic Chronic 2 : Hazardous to the aquatic environment - Chronic hazard - Category 2 Asp. Tox. 1 : Aspiration hazard - Category 1 CO : Carbon monoxide DNEL (Derived No Effect Level) : an estimated safe exposure level EC50 : median Effective Concentration EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule Eye Irrit. 2 : Eye irritation - Category 2 Flam. Liq. 3 : Flammable liquids - Category 3 IATA (International Air Transport Association) : provisions concerning the international carriage of dangerous goods by air IMDG (International Maritime Dangerous Goods code) LC50 : median Lethal Concentration

SECTION 16. Other information (continued)

LD50 : median Lethal Dose
M-Factor : a multiplying factor that is applied to the concentration of a substance classified as hazardous to the aquatic environment (Aquatic Acute 1; H400 or Aquatic Chronic 1; H410) and is used to derive by the summation method the classification of a mixture in which the substance is present
NFPA (National Fire Protection Association) or fire diamant
NOEC (No Observed Effect Concentration)
NVIC : National Poisoning Information Center
OECD : Organisation for Economic Cooperation and Development
PBT : persistent, bioaccumulative and toxic
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects
RCP (Reciproke Calculation Procedure)
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : Regulation concerning the International carriage of Dangerous goods by rail
SCL (Specific Concentration Limits)
Skin Irrit. 2 : Skin irritation - Category 2
SZW-list : List of carcinogenic substances and processes as referred to in Article 4. 11 of the Working conditions decree
SZW-list : Non-limitative list of reproduction toxic substances to which the additional registration obligation applies as referred to in Article 4.2a, second paragraph of the Working conditions decree
TWA (Time-Weighted Average) : the average exposure over a specified period
UVCB : substance of Unknown or Variable composition, Complex reaction product or Biological material
WGK (Wassergefahrdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water
vPvB : very persistent and very bioaccumulative

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.
BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

End of document

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	NA	NA	1, 2, 3, 4, 8b, 15	1	NA	ES12578
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8b, 15	6a	NA	ES12592
3	Distribution of substance	3	NA	NA	1, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES12612
4	Formulation & (re)packing of substances and mixtures	3	NA	NA	1, 2, 3, 4, 5, 8b, 15	2	NA	ES12604
5	Formulation of coatings and adhesives	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES12718
6	Use in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	4	NA	ES12722
7	Use in coatings	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	8a, 8d	NA	ES12859
8	Formulation of adhesives and sealants	3	10	NA	1, 2, 3, 4, 5, 8b, 9, 14, 15	2	NA	ES12884
9	Use in adhesives and sealants	3	NA	NA	1, 2, 3, 4, 5, 7, 8b, 10, 13, 15	5	NA	ES12886
10	Use in adhesives and sealants	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15	8c, 8f	NA	ES12890
11	Use in coatings	21	NA	9a, 9b, 9c, 18	NA	8a, 8d	NA	ES12898
12	Use in adhesives and sealants	21	NA	1	NA	8c, 8f	NA	ES12934
13	Formulation of solvents	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES12869
14	Use as a solvent	3	NA	NA	1, 2, 3, 4, 5, 7, 8b, 10, 13, 15	4, 7	NA	ES12871
15	Use as a solvent	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15	8a, 8d, 9a, 9b	NA	ES12880

16	Use as a solvent	21	NA	15	NA	8a, 8d, 9a, 9b	NA	ES12930
17	Use as a chemical stripper	3	NA	NA	8a, 8b, 21, 24	4	NA	ES12865
18	Use as a chemical stripper	22	NA	NA	8a, 8b, 21, 24	8a, 8d	NA	ES12867
19	Use as a chemical stripper	21	NA	9a	NA	8a, 8d	NA	ES12921
20	Use in the compounding of fragrances	3	10	NA	1, 3, 5, 8a, 8b, 9, 15	2	NA	ES12624
21	Formulation of fragrances	3	10	NA	1, 2, 3, 5, 8a, 8b, 9, 13, 14, 15	2	NA	ES12627
22	Use of fragrances	3	NA	NA	1, 2, 4, 5, 7, 8a, 8b, 10, 15, 19	4	NA	ES12676
23	Use of fragrances	22	NA	NA	1, 2, 4, 5, 8a, 8b, 10, 11, 15, 19	8a, 8d, 10b, 11b	NA	ES12714
24	Use of fragrances	21	NA	1, 3, 8, 9a, 9b, 9c, 13, 18, 28, 31, 34, 35, 39	NA	8a, 8d, 10b, 11b	0, 31, 34, 35	ES12896

1. Short title of Exposure Scenario 1: Manufacture of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances
Activity	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC1		
Substance is complex UVCB, Non-hydrophobic. , Readily biodegradable.		
Amount used	Amounts used in the EU (tonnes/year)	5500
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	5500
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	15068
	Annual site tonnage	5500
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,05
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,06
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,05
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	4,8 .10-6
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-6
	based on initial default values with subsequent RMM, .	
	Indoor use Process with efficient use of raw materials. Volatile compounds subject to air emission controls. Application of the STP sludge on agricultural soil	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment (Water ERC1)
	Degradation efficiency	76 % (Water ERC1)
	Type of Sewage Treatment Plant	Biological treatment (Water, Sludge Treatment ERC1)
	Degradation efficiency	60 % (Water, Sludge Treatment ERC1)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Water, Sludge Treatment ERC1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (Air, Water ERC1)
	Disposal methods	(Efficiency: > 90 %) (Air, Water ERC1)
	Waste treatment	Hazardous waste incineration (Soil ERC1)
	Disposal methods	(Efficiency: > 99 %) (Soil ERC1)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Batch process Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure containment of the emission source Avoid carrying out operation for more than 15 minutes.(PROC2, PROC3)
	Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC4)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Drum and small package filling Semi-bulk packaging	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC3, PROC4)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process With sample collection	Wear protective gloves. Use suitable eye protection.(PROC4)
	Bulk transfers	Use suitable eye protection.(PROC8b)
	Product sampling	Avoid carrying out operation for more than 15 minutes. Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Drum and small package filling Semi-bulk packaging	Wear chemically resistant gloves. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

ERC1: Environmental exposure estimation is based on Ecetoc TRA model v2.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC1	---	---	Msafe	210241kg/day	---

Workers

Worker exposure has been evaluated using ECETOC TRA V2.0. Advanced REACH Tool (ART model).

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 2: Use as an intermediate	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Activity	Chemical synthesis.

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	5200
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	5200
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	14247
	Annual site tonnage	5200
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,05
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,05
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-5
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment
	Degradation efficiency	76 %
	Type of Sewage Treatment Plant	Biological treatment (Sludge Treatment ERC6a)
	Degradation efficiency	60 % (Sludge Treatment ERC6a)
	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Sludge Treatment ERC6a)

Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (ERC6a)
	Disposal methods	(Efficiency: > 90 %) (ERC6a)
	Waste treatment	Hazardous waste incineration (ERC6a)
	Disposal methods	(Efficiency: > 99 %) (ERC6a)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Batch process Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure containment of the emission source Avoid carrying out operation for more than 15 minutes.(PROC2, PROC3)
	Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC4)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15

		minutes.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC3, PROC4)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process With sample collection	Wear protective gloves. Use suitable eye protection.(PROC4)
	Bulk transfers	Use suitable eye protection.(PROC8b)
	Product sampling	Avoid carrying out operation for more than 15 minutes. Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ERC6a: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6a	---	---	Msafe	88569kg/day	---
ERC6a	---	Fresh water	exposure estimate	0,000606mg/L	0,0688
ERC6a	---	Fresh water sediment	exposure estimate	0,156mg/kg dry weight (d.w.)	0,0689
ERC6a	---	Marine water	exposure estimate	0,0000593mg/L	0,0673
ERC6a	---	Marine sediment	exposure estimate	0,0153mg/kg dry weight (d.w.)	0,0674
ERC6a	---	Sewage treatment plant (STP)	exposure estimate	0,00523mg/L	0,000792
ERC6a	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708

ERC6a	---	Agricultural soil	exposure estimate	0,0294mg/kg dry weight (d.w.)	0,161
ERC6a	---	Air	exposure estimate	0,198mg/m³	---

Workers

PROC2, PROC3, PROC4, PROC8b, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)
PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,0215
PROC2, PROC3	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,0861
PROC4	---	Worker - inhalative, long-term	4,90ppm	0,819
PROC4	---	Worker - dermal, short-term - local	0,50mg/cm2	0,431
PROC8b	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC15	---	Worker - inhalative, long-term	2,80ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 3: Distribution of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Transport and Distribution

2.1 Contributing scenario controlling environmental exposure for: ERC2		
Substance is complex UVCB, Non-hydrophobic. , Readily biodegradable.		
Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	800
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	2192
	Annual site tonnage	800
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational	Continuous release	

conditions affecting environmental exposure	Number of emission days per year	365
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-4
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment
	Degradation efficiency	76 %
	Type of Sewage Treatment Plant	Biological treatment (Sludge Treatment ERC2)
	Degradation efficiency	60 % (Sludge Treatment ERC2)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Sludge Treatment ERC2)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (ERC2)
	Disposal methods	(Efficiency: > 90 %) (ERC2)
	Waste treatment	Hazardous waste incineration (ERC2)
	Disposal methods	(Efficiency: > 99 %) (ERC2)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1)
	Disposal of wastes	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4)
	Process sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC3, PROC8b)
	Mixing operations (open systems)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5)
	Transfer from/pouring from containers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

		Avoid carrying out operation for more than 1 hour.(PROC8b)
	Bulk transfers Closed systems	Clear transfer lines prior to de-coupling. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.(PROC8b)
	Bulk transfers Open systems	Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.(PROC8b)
	Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Drum/batch transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Disposal of wastes	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 1 %.(PROC8b)
	Drum and small package filling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC9)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Process sampling	Use suitable eye protection and gloves.(PROC3, PROC8b)
	Mixing operations (open systems)	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Transfer from/pouring from containers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8a)
	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Bulk transfers Closed systems	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Bulk transfers Open systems	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Equipment cleaning and	Wear chemically resistant gloves.

maintenance	Use suitable eye protection.(PROC8b)
Drum/batch transfers	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
Drum and small package filling	Wear chemically resistant gloves. Use suitable eye protection.(PROC9)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	99958kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000165mg/L	0,0188
ERC2	---	Fresh water sediment	exposure estimate	0,0427mg/kg dry weight (d.w.)	0,0188
ERC2	---	Marine water	exposure estimate	0,0000152mg/L	0,0173
ERC2	---	Marine sediment	exposure estimate	0,00393mg/kg dry weight (d.w.)	0,0173
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,000804mg/L	0,000122
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,00325mg/kg dry weight (d.w.)	0,0219
ERC2	---	Air	exposure estimate	0,0153	---

Workers

PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,007ppm	0,00663
PROC1, PROC3	---	Worker - dermal, short-	0,0250mg/cm2	0,155

		term - local		
PROC3, PROC4	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC4	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC9	---	Worker - inhalative, long-term	2,2ppm	0,368
PROC5, PROC8a, PROC8b, PROC9	---	Worker - dermal, short-term - local	0,0999ppm	0,621
PROC15, PROC8a	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155
PROC8b	---	Worker - inhalative, long-term	2,0ppm	0,334

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 4: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	800
	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	2192
	Annual site tonnage	800
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational	Continuous release	

conditions affecting environmental exposure	Number of emission days per year	365
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	1,92 .10-5
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	1,0 .10-4
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Biological treatment (Water ERC2)
	Degradation efficiency	76 % (Water ERC2)
	Type of Sewage Treatment Plant	Biological treatment (Water, Sludge Treatment ERC2)
	Degradation efficiency	60 % (Water, Sludge Treatment ERC2)

	Sludge Treatment	Sludge treatment e.g. thermal sludge reduction (Water, Sludge Treatment ERC2)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Hazardous waste incineration (Air, Water ERC2)
	Disposal methods	(Efficiency: > 90 %) (Air, Water ERC2)
	Waste treatment	Hazardous waste incineration (Soil ERC2)
	Disposal methods	(Efficiency: > 99 %) (Soil ERC2)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Disposal of wastes	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4)
	Mixing operations (open systems)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5)
	Bulk transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Product sampling	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Drum and small package filling Semi-bulk packaging	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not

		less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 1 %.(PROC8b)
	Disposal of wastes Equipment cleaning and maintenance	Limit the substance content in the product to 1 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems)	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Product sampling	Use suitable eye protection. Wear chemically resistant gloves.(PROC8b)
	Drum and small package filling Semi-bulk packaging	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Use suitable eye protection and gloves.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	99958kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000165mg/L	0,0188
ERC2	---	Fresh water sediment	exposure estimate	0,0427mg/kg dry weight	0,0188

				(d.w.)	
ERC2	---	Marine water	exposure estimate	0,0000152mg/L	0,0173
ERC2	---	Marine sediment	exposure estimate	0,00393mg/kg dry weight (d.w.)	0,0173
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,000804mg/L	0,000122
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,00325mg/kg dry weight (d.w.)	0,0219
ERC2	---	Air	exposure estimate	0,0153	---

Workers

PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2, PROC3, PROC4	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC2, PROC4, PROC5, PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC5	---	Worker - inhalative, long-term	1,1ppm	0,184
PROC8b	---	Worker - inhalative, long-term	5,3ppm	0,886
PROC15	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC15	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 5: Formulation of coatings and adhesives	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE spERC 2.1a.v1 has been used to evaluate the exposure for the environment.
, CEPE spERC 2.1b.v1 has been used to evaluate the exposure for the environment.
, CEPE spERC 2.2a. v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.

Amount used	Amounts used in the EU (tonnes/year)	780
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Regional use tonnage (tons/year):	90 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Fraction of regional tonnage used locally:	1 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Maximum daily site	444 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)

	tonnage (kg/day):	
	Maximum daily site tonnage (kg/day):	400 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Annual site tonnage	100 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Annual site tonnage	90 (CEPE 2.1b.v1, CEPE 2.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	225
	Emission or Release Factor: Air	0,006 (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Air	0,004 (CEPE 2.1b.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1)	
	Emission or Release Factor: Air	0,00009 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Air	0,005 (CEPE 2.1b.v1, CEPE 2.2a.v1)
	initial release prior to RMM, . (CEPE 2.1b.v1, CEPE 2.2a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE

		2.2a.v1)
	Percentage removed from waste water	98 % (CEPE 2.1a.v1, CEPE 2.1b.v1, CEPE 2.2a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Percentage removed from waste water	95 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Degradation efficiency	96,2 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
	Percentage removed from waste water	99 % (CEPE 2.1b.v1, CEPE 2.2a.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Continuous process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC2)
	Mixing operations Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or

		extract ventilation.(PROC3)
	Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC4, PROC5)
	Material transfers Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8a)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
	Equipment cleaning and maintenance	Drain or remove substance from equipment prior to break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Disposal of wastes	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Drum and small package filling	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC9)
	Laboratory activities	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. Use suitable eye protection.(PROC8a)
	Material transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)

3. Exposure estimation and reference to its source

Environment

CEPE SPERC 2.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
CEPE SPERC 2.1a.v1	---	---	Msafe	44317kg/day	---
CEPE SPERC 2.1a.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
CEPE SPERC 2.1a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
CEPE SPERC 2.1a.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
CEPE SPERC 2.1a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
CEPE SPERC 2.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
CEPE SPERC 2.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
CEPE SPERC 2.1a.v1	---	Agricultural soil	exposure estimate	0,0000418mg/kg dry weight (d.w.)	0,000093
CEPE SPERC 2.1a.v1	---	Air	exposure estimate	0,000525	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, PROC15: ECETOC TRA model v2

PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,0947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2, PROC3	---	Worker - inhalative, long-term	1,4ppm	0,234
PROC2	---	Worker - dermal, short-	0,00999mg/cm2	0,0621

		term - local		
PROC4	---	Worker - inhalative, long-term	2,8ppm	0,468
PROC4, PROC8b, PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC9	---	Worker - inhalative, long-term	3,3ppm	0,552
PROC8b, PROC8a	---	Worker - inhalative, long-term	4,30ppm	0,719
PROC8b	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0621
PROC15	---	Worker - inhalative, long-term	1,0ppm	0,167
PROC15	---	Worker - dermal, short-term - local	0,0025mg/cm2	0,0155

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 6: Use in coatings	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE SPERC 4.na.v1.
, CEPE SPERC 4.nb.v1.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	300
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 4.1a.v1, CEPE 4.1b.v1, ESVOC 4.3a.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 4.3a.v1, CEPE 4.1a.v1, CEPE 4.1b.v1)
	Maximum daily site tonnage (kg/day):	455 (CEPE 4.1a.v1, CEPE 4.1b.v1)

	Maximum daily site tonnage (kg/day):	333 (ESVOC 4.3a.v1)
	Annual site tonnage	100 (CEPE 4.1a.v1, CEPE 4.1b.v1, ESVOC 4.3a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release(CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Number of emission days per year	220 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	Continuous release(ESVOC 4.3a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1)
	Emission or Release Factor: Air	0,8 (CEPE 4.1a.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1)	
	Emission or Release Factor: Air	0,98 (CEPE 4.1b.v1)
	initial release prior to RMM, . (CEPE 4.1b.v1)	
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Water	0,002 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		

Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	95 % (only CEPE 4.1b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	99 % (only CEPE 4.1b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation.

	Ensure samples are obtained under containment or extract ventilation.(PROC1)
Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1, PROC2)
Preparation of material for application	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extract ventilation to points where emissions occur.(PROC3)
Preparation of material for application	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation. Limit the substance content in the product to 10 %.(PROC5)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extraction ventilation at points where emissions occur.(PROC2)
Bulk open loading Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC3)
Spraying (automatic/robotic)	Limit the substance content in the product to 25 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
Roller, spreader, flow application	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC10)
Equipment cleaning and maintenance	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC8a)
Disposal of wastes Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)

	Laboratory activities	Limit the substance content in the product to 25 %. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
	Film formation - air drying	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC4)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Wear chemically resistant gloves. Use suitable eye protection.(PROC1)
	Preparation of material for application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC5)
	Spraying (automatic/robotic)	Wear chemically resistant gloves. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC7)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8b)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.3a.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.

ESVOC SPERC 4.3a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.3a.v1	---	---	Msafe	3107kg/day	---
ESVOC SPERC 4.3a.v1	---	Fresh water	exposure estimate	0,000532mg/L	0,0605
ESVOC SPERC 4.3a.v1	---	Fresh water sediment	exposure estimate	0,137mg/kg dry weight (d.w.)	0,0605
ESVOC SPERC 4.3a.v1	---	Marine water	exposure estimate	0,0000519mg/L	0,0589
ESVOC SPERC 4.3a.v1	---	Marine sediment	exposure estimate	0,0134mg/kg dry weight (d.w.)	0,059
ESVOC SPERC 4.3a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00446mg/L	0,000675
ESVOC SPERC 4.3a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.3a.v1	---	Agricultural soil	exposure estimate	0,0116mg/kg dry weight (d.w.)	0,107
ESVOC SPERC 4.3a.v1	---	Air	exposure estimate	0,00753	---

Workers

PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	1,5ppm	0,251
PROC1, PROC2, PROC8a, PROC10	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC2, PROC15	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC3	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC4	---	Worker - inhalative, long-	0,023ppm	0,00385

		term		
PROC4	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5, PROC7, PROC8a, PROC10	---	Worker - inhalative, long-term	2,7ppm	0,452
PROC5	---	Worker - dermal, short-term - local	0,12mg/cm2	0,745
PROC7	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC8b	---	Worker - inhalative, long-term	0,9ppm	0,853
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC15	---	Worker - dermal, short-term - local	0,00150mg/cm2	0,00932

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 7: Use in coatings	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	110
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	1 (CEPE 8a.n.v1)
	Regional use tonnage (tons/year):	10 (ESVOC 8.3b.v1)
	Fraction of regional tonnage used locally:	0,002 (CEPE 8a.n.v1)

	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3b.v1)
	Maximum daily site tonnage (kg/day):	0,0055 (CEPE 8a.n.v1)
	Maximum daily site tonnage (kg/day):	0,0137 (ESVOC 8.3b.v1)
	Annual site tonnage	0,002 (CEPE 8a.n.v1)
	Annual site tonnage	0,005 (ESVOC 8.3b.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98 (CEPE 8a.n.v1, ESVOC 8.3b.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1, ESVOC 8.3b.v1)	
	Emission or Release Factor: Water	0,02 (CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1)	
	Emission or Release Factor: Water	0,01 (ESVOC 8.3b.v1)
	initial release prior to RMM, . (ESVOC 8.3b.v1)	
	Emission or Release Factor: Soil	0,01 (ESVOC 8.3b.v1)
	initial release prior to RMM, . (ESVOC 8.3b.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (ESVOC 8.3b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (ESVOC 8.3b.v1)
	Degradation efficiency	96,2 % (ESVOC 8.3b.v1)

	Percentage removed from waste water	96,2 % (ESVOC 8.3b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (CEPE 8a.n.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (CEPE 8a.n.v1)
	Degradation efficiency	96,2 % (CEPE 8a.n.v1)
	Percentage removed from waste water	95 % (CEPE 8a.n.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC1)
	Storage	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC1, PROC2)
	Preparation of material for application	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system.(PROC3)
	Preparation of material for application	Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation. Limit the substance content in the product to 10

	%.(PROC5)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Limit the substance content in the product to 25 %. Handle substance within a closed system. Store substance within a closed system. Provide extraction ventilation at points where emissions occur.(PROC2)
Bulk open loading Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC3)
Ad hoc manual application via trigger sprays, dipping, etc.	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 15 minutes. Ensure material transfers are under containment or extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC13)
Roller, spreader, flow application	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC10)
Equipment cleaning and maintenance	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC8a)
Disposal of wastes Storage	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8a)
Laboratory activities	Limit the substance content in the product to 25 %. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
Film formation - air drying	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC4)
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure material transfers are under containment or

	within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	extract ventilation. Ensure samples are obtained under containment or extract ventilation.(PROC8b)
	Spraying/ fogging by manual application	Limit the substance content in the product to 10 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)
	Hand application - fingerpaints, pastels, adhesives	Limit the substance content in the product to 10 %.(PROC19)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC1)
	Preparation of material for application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC5)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8b)
	Spraying/ fogging by manual application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Hand application - fingerpaints, pastels, adhesives	Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC19)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3b.v1	---	---	Msafe	1,35kg/day	---
ESVOC SPERC 8.3b.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3b.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3b.v1	---	Marine water	exposure estimate	0,0000754mg/L	0,00857
ESVOC SPERC 8.3b.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000026mg/L	< 0,001
ESVOC SPERC 8.3b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3b.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071
ESVOC SPERC 8.3b.v1	---	Air	exposure estimate	0,0000743	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC8a	---	Worker - inhalative, long-term	1,50ppm	0,251
PROC2, PROC5, PROC8a,	---	Worker - dermal, short-term - local	0,006mg/cm2	0,0373

PROC10				
PROC3, PROC13	---	Worker - inhalative, long-term	2,80ppm	0,468
PROC4, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC4, PROC5, PROC10, PROC11	---	Worker - inhalative, long-term	2,70ppm	0,0452
PROC8a, PROC10, PROC11, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC11	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC15	---	Worker - inhalative, long-term	1,0ppm	0,167
PROC19	---	Worker - inhalative, long-term	1,20ppm	0,201
PROC19	---	Worker - dermal, short-term - local	0,124mg/cm2	0,769

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 8: Formulation of adhesives and sealants	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 2.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 2.1c.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 2.2a.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	600
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
	Fraction of regional tonnage used locally:	1 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
	Maximum daily site tonnage (kg/day):	909 (FEICA 2.1b.v1)
	Maximum daily site	1364,909 ton(s)/year (FEICA 2.1c.v1, FEICA

	tonnage:	2.2a.v1)
	Annual site tonnage	200 (FEICA 2.1c.v1, FEICA 2.1b.v1, FEICA 2.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0,006 (FEICA 2.1c.v1, FEICA 2.1b.v1)
	initial release prior to RMM, . (FEICA 2.1c.v1, FEICA 2.1b.v1)	
	Emission or Release Factor: Air	0,004 (FEICA 2.2a.v1)
	initial release prior to RMM, . (FEICA 2.2a.v1)	
	Indoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 2.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 2.1b.v1)
	Degradation efficiency	96,2 % (FEICA 2.1b.v1)
	Percentage removed from waste water	98 % (FEICA 2.1b.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Degradation efficiency	96,2 % (FEICA 2.1c.v1, FEICA 2.2a.v1)
	Percentage removed from waste water	95 % (FEICA 2.1c.v1, FEICA 2.2a.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC1)
	Formulation Continuous process With sample collection	Provide extract ventilation to points where emissions occur.(PROC2)
	Mixing operations Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC3)
	Formulation Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Bulk transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Small package filling	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC9)
	Production or preparation	Provide extract ventilation to points where

	or articles by tabletting, compression, extrusion or pelletisation	emissions occur. Limit the substance content in the product to 25 %.(PROC14)
	Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC3)
Conditions and measures related to personal protection, hygiene and health evaluation	Formulation Continuous process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC2)
	Mixing operations Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Formulation Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC4, PROC5)
	Bulk transfers Dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8b)
	Small package filling	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC9)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC14)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 2.1b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 2.1b.v1	---	---	Msafe	90647kg/day	---
FEICA SPERC 2.1b.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
FEICA SPERC 2.1b.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01

FEICA SPERC 2.1b.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
FEICA SPERC 2.1b.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
FEICA SPERC 2.1b.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
FEICA SPERC 2.1b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 2.1b.v1	---	Agricultural soil	exposure estimate	0,0000799mg/kg dry weight (d.w.)	0,000178
FEICA SPERC 2.1b.v1	---	Air	exposure estimate	0,000982	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC15: ECETOC TRA model v2

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	0,250ppm	0,237
PROC4	---	Worker - inhalative, long-term	0,2ppm	0,189
PROC4, PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC5	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC9, PROC14	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC9	---	Worker - dermal, short-	0,03mg/cm2	0,186

		term - local		
PROC14	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC15	---	Worker - inhalative, long-term	1,50ppm	0,0251

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 9: Use in adhesives and sealants	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC5: Industrial use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC5

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 5.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 5.2b.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	800
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200 (FEICA 5.1a.v1, FEICA 5.1b.v1, FEICA 5.2a.v1, FEICA 5.2b.v1)
	Fraction of regional tonnage used locally:	0,11 (FEICA 5.1a.v1)
	Fraction of regional tonnage used locally:	0,88 (FEICA 5.1b.v1)
	Fraction of regional tonnage used locally:	0,66 (FEICA 5.2a.v1)
	Fraction of regional	1 (FEICA 5.2b.v1)

	tonnage used locally:	
	Maximum daily site tonnage (kg/day):	100 (FEICA 5.1a.v1)
	Maximum daily site tonnage (kg/day):	800 (FEICA 5.1b.v1)
	Maximum daily site tonnage (kg/day):	600 (FEICA 5.2a.v1)
	Maximum daily site tonnage (kg/day):	909 (FEICA 5.2b.v1)
	Annual site tonnage	22 (FEICA 5.1a.v1)
	Annual site tonnage	176 (FEICA 5.1b.v1)
	Annual site tonnage	132 (FEICA 5.2a.v1)
	Annual site tonnage	200 (FEICA 5.2b.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0,009 (FEICA 5.1b.v1)
	initial release prior to RMM, . (FEICA 5.1b.v1)	
	Emission or Release Factor: Air	0,017 (FEICA 5.1b.v1)
	initial release prior to RMM, . (FEICA 5.1b.v1)	
	Emission or Release Factor: Air	0,2 (FEICA 5.2a.v1, FEICA 5.2b.v1)
	initial release prior to RMM, . (FEICA 5.2a.v1, FEICA 5.2b.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage	2.000 m3/d

	treatment plant effluent	
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Degradation efficiency	96,2 % (FEICA 5.2a.v1, FEICA 5.2b.v1)
	Percentage removed from waste water	80 % (FEICA 5.2a.v1, FEICA 5.2b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Continuous process Closed systems	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC2)
	Mixing operations Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC3)
	Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25

		%.(PROC3)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC4, PROC5)
	Spraying	Limit the substance content in the product to 25 %. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Material transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings. Limit the substance content in the product to 25 %.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 25 %.(PROC10)
	Dipping, immersion and pouring	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC13)
	Laboratory activities	Limit the substance content in the product to 25 %. Handle in a fume cupboard or under extract ventilation.(PROC15)
	Disposal of wastes	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC3)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC3)
	Mixing operations (open systems) Batch process	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC4, PROC5)
	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC7)
	Material transfers Dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8b)

Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)
Dipping, immersion and pouring	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC13)
Laboratory activities	Wear chemically resistant gloves. Use suitable eye protection.(PROC15)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 5.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 5.1a.v1	---	---	Msafe	90647kg/day	---
FEICA SPERC 5.1a.v1	---	Fresh water	exposure estimate	0,0000881mg/L	0,01
FEICA SPERC 5.1a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
FEICA SPERC 5.1a.v1	---	Marine water	exposure estimate	0,0000074mg/L	0,00847
FEICA SPERC 5.1a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00848
FEICA SPERC 5.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,001mg/L	< 0,001
FEICA SPERC 5.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 5.1a.v1	---	Agricultural soil	exposure estimate	0,000118mg/kg dry weight (d.w.)	0,000262
FEICA SPERC 5.1a.v1	---	Air	exposure estimate	0,00144	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC15	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC2	---	Worker - dermal, short-term - local	0,006mg/cm2	0,0373
PROC4	---	Worker - inhalative, long-term	0,2ppm	0,189
PROC3	---	Worker - inhalative, long-term	0,150ppm	0,142
PROC3	---	Worker - dermal, short-term - local	0,00150mg/cm2	0,00932
PROC4	---	Worker - inhalative, long-term	0,120ppm	0,114
PROC4, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC5	---	Worker - dermal, short-term - local	0,003mg/cm2	0,0186
PROC7	---	Worker - inhalative, long-term	0,750ppm	0,710
PROC7	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC8b	---	Worker - inhalative, long-term	0,09ppm	0,0853
PROC10, PROC13	---	Worker - inhalative, long-term	0,30ppm	0,284
PROC10	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC13	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC15	---	Worker - dermal, short-term - local	0,0003mg/cm2	0,00186

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 10: Use in adhesives and sealants	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8f

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 8c.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.1.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.2.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	1200
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Fraction of regional tonnage used locally:	0,002 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)

	Maximum daily site tonnage (kg/day):	0,1096 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Annual site tonnage	0,04 (FEICA 8c.2b.v1, FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98 (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Water	0,01 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Continuous process Closed systems	Limit the substance content in the product to 25 %. Handle in a fume cupboard or under extract ventilation.(PROC2)
	Mixing operations Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations (open systems) Batch process	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4, PROC5)
	Spraying	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)
	Material transfers Dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes. Limit the substance content in the product to 25 %.(PROC8b)
	Roller, spreader, flow application	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Dipping, immersion and	Limit the substance content in the product to 25 %.

	pouring	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC13)
	Laboratory activities	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Limit the substance content in the product to 25 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Batch process	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC3)
	Mixing operations (open systems) Batch process	Wear chemically resistant gloves. Use suitable eye protection.(PROC4, PROC5)
	Spraying	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Material transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC10)
	Dipping, immersion and pouring	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC13)
	Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 8f.1.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 8f.1.v1	---	---	Msafe	10,55kg/day	---
FEICA SPERC 8f.1.v1	---	Fresh water	exposure estimate	0,0000913mg/L	0,0104
FEICA SPERC 8f.1.v1	---	Fresh water sediment	exposure estimate	0,0236mg/kg dry weight (d.w.)	0,0104
FEICA SPERC 8f.1.v1	---	Marine water	exposure estimate	0,0000078mg/L	0,00883
FEICA SPERC 8f.1.v1	---	Marine sediment	exposure estimate	0,00201mg/kg dry weight (d.w.)	0,00884
FEICA SPERC 8f.1.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000314mg/L	0,000005
FEICA SPERC 8f.1.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 8f.1.v1	---	Agricultural soil	exposure estimate	0,0000810mg/kg dry weight (d.w.)	0,000755
FEICA SPERC 8f.1.v1	---	Air	exposure estimate	0,0000722	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term	0,006ppm	0,00568
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC2, PROC3	---	Worker - inhalative, long-term	0,110ppm	0,0184
PROC2, PROC5, PROC8a, PROC8b, PROC10, PROC13	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373

PROC4	---	Worker - inhalative, long-term	0,210ppm	0,0351
PROC4	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC5	---	Worker - inhalative, long-term	0,760mg/cm2	0,127
PROC8a, PROC8b	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC10	---	Worker - inhalative, long-term	0,910mg/cm2	0,152
PROC11	---	Worker - inhalative, long-term	0,210ppm	0,351
PROC11	---	Worker - dermal, short-term - local	0,0941mg/cm2	0,582
PROC13	---	Worker - inhalative, long-term	0,650ppm	0,109
PROC15	---	Worker - inhalative, long-term	1,0mg/cm2	0,167
PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 11: Use in coatings	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC18: Ink and toners
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,985
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,005
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	6 days/year

	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.3 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 days/year
	Exposure duration per event	0,3 h
Other given operational conditions affecting consumers exposure	Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.4 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	3 days/year
	Exposure duration per event	2,0 h

Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.5 Contributing scenario controlling consumer exposure for: PC9b: Fillers and putty		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	85 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	12 days/year
	Exposure duration per event	4,0 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,70 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.6 Contributing scenario controlling consumer exposure for: PC9b: Plasters and floor equalizers		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,1%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	13800 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	12 days/year
	Exposure duration per event	2,0 h
Human factors not influenced by	Exposed skin area	Covers skin contact area up to 857,50 cm²

risk management		
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.7 Contributing scenario controlling consumer exposure for: PC9b: Modelling clay		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,40 cm²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.8 Contributing scenario controlling consumer exposure for: PC9c: Finger paints		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,2%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1,35 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,40 cm²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.9 Contributing scenario controlling consumer exposure for: PC18		
Product characteristics	Concentration of the Substance in	Concentration of substance in product: 0% - 0,25%

	Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	40 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	365 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 71,40 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00857
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071

ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000743	---

Consumers

ECETOC TRA consumer v3.

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 12: Use in adhesives and sealants	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, FEICA spERC 8c.1a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.1b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2a.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8c.2b.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.1.v1 has been used to evaluate the exposure for the environment.
, FEICA spERC 8f.2.v1 has been used to evaluate the exposure for the environment.
, For more information on FEICA spERC from the Adhesives & Sealants sector, please visit the website: www.feica.eu.

Amount used	Amounts used in the EU (tonnes/year)	1200
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Fraction of regional tonnage used locally:	0,002 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Maximum daily site tonnage (kg/day):	0,1096 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	Annual site tonnage	0,04 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365

	Emission or Release Factor: Air	0,98 (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8c.2b.v1, FEICA 8f.2.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Water	0,01 (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)
	initial release prior to RMM, . (FEICA 8f.1.v1, FEICA 8f.2.v1, FEICA 8c.1a.v1, FEICA 8c.1b.v1, FEICA 8c.2a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	15000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 days/year

	Exposure duration per event	6,0 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,80 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

FEICA SPERC 8c.1a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
FEICA SPERC 8c.1a.v1	---	Fresh water	exposure estimate	0,000913mg/L	0,0104
FEICA SPERC 8c.1a.v1	---	Fresh water sediment	exposure estimate	0,0236mg/kg dry weight (d.w.)	0,0104
FEICA SPERC 8c.1a.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00854
FEICA SPERC 8c.1a.v1	---	Marine sediment	exposure estimate	0,0201mg/kg dry weight (d.w.)	0,00883
FEICA SPERC 8c.1a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000314mg/L	0,000005
FEICA SPERC 8c.1a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
FEICA SPERC 8c.1a.v1	---	Agricultural soil	exposure estimate	0,0000810mg/kg dry weight (d.w.)	0,000755
FEICA SPERC 8c.1a.v1	---	Air	exposure estimate	0,0000722	---

Consumers

PC1: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1	---	Consumer - inhalative,	0,291ppm	0,411

		long-term - systemic		

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 13: Formulation of solvents	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 2.2.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	200
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	200

	Fraction of regional tonnage used locally:	1
	Maximum daily site tonnage (kg/day):	667
	Annual site tonnage	200
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	300
	Emission or Release Factor: Air	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,0002
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national

		regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Formulation Continuous process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations Batch processes at elevated temperatures With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Mixing operations (open systems) Batch process With sample collection	Provide extract ventilation to points where emissions occur.(PROC4)
	Bulk transfers Non-dedicated facility	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 1 hour.(PROC8a)
	Bulk transfers Dedicated facility	Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 1 hour.(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Disposal of wastes	Limit the substance content in the product to 1 %.

		Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC8a)
	Small package filling	Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Provide extract ventilation to points where emissions occur.(PROC14)
	Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers Non-dedicated facility	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)
	Equipment cleaning and maintenance	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC14)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 2.2.v1: ECETOC TRA model v2

ERC2: Environmental exposure estimation is based on Ecetoc TRA model v2.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	10966kg/day	---
ESVOC SPERC 2.2.v1	---	Fresh water	exposure estimate	0,000342mg/L	0,0389
ESVOC SPERC 2.2.v1	---	Fresh water sediment	exposure estimate	0,0883mg/kg dry weight (d.w.)	0,0389
ESVOC SPERC 2.2.v1	---	Marine water	exposure estimate	0,0000328mg/L	0,0373
ESVOC SPERC 2.2.v1	---	Marine sediment	exposure estimate	0,00848mg/kg dry weight (d.w.)	0,0374
ESVOC SPERC 2.2.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00255mg/L	0,000386
ESVOC SPERC 2.2.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708

ESVOC SPERC 2.2.v1	---	Agricultural soil	exposure estimate	0,00638mg/kg dry weight (d.w.)	0,0608
ESVOC SPERC 2.2.v1	---	Air	exposure estimate	0,00159	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1	---	Worker - dermal, short-term - local	250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,10ppm	0,284
PROC2, PROC8b	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC3, PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,155
PROC4, PROC5	---	Worker - inhalative, long-term	2,50ppm	0,418
PROC4, PROC5, PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC8a	---	Worker - inhalative, long-term	4,4ppm	0,740
PROC8a	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0621
PROC8b	---	Worker - inhalative, long-term	0,70ppm	0,663
PROC9	---	Worker - inhalative, long-term	1,10ppm	0,719
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC15	---	Worker - inhalative, long-term	4,60ppm	0,0686
PROC15	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0155

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 14: Use as a solvent	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC7: Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.4a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.5a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.7a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.9.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.10a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.6a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.19a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.20a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.21a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 4.23.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 7.12a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 7.13a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	2208,7
	Fraction of EU tonnage	1

	used in region:	
	Regional use tonnage (tons/year):	200 (ESVOC 4.4a.v1, ESVOC 4.3a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 7.13a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Regional use tonnage (tons/year):	8 (ESVOC 4.5a.v1)
	Regional use tonnage (tons/year):	0,7 (ESVOC 4.23.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 4.3a.v1, ESVOC 4.5a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Fraction of regional tonnage used locally:	0,5 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Fraction of regional tonnage used locally:	0,09 (ESVOC 4.23.v1)
	Fraction of regional tonnage used locally:	0,005 (ESVOC 7.13a.v1)
	Maximum daily site tonnage (kg/day):	666,7 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Maximum daily site tonnage (kg/day):	5000 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Maximum daily site tonnage (kg/day):	2000 (ESVOC 4.10a.v1)
	Maximum daily site tonnage (kg/day):	4 (ESVOC 4.23.v1)
	Maximum daily site tonnage (kg/day):	50 (ESVOC 7.13a.v1)
	Annual site tonnage	200 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 4.10a.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Annual site tonnage	100 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1)
	Annual site tonnage	8 (ESVOC 4.5a.v1)
	Annual site tonnage	1 (ESVOC 7.13a.v1)
	Annual site tonnage	0,1 (ESVOC 4.23.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100

Other given operational conditions affecting environmental exposure	Continuous release(ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1, ESVOC 4.9.v1, ESVOC 7.12a.v1, ESVOC 4.19.v1, ESVOC 4.20.v1, ESVOC 4.21a.v1)
	Continuous release(ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 7.13a.v1, ESVOC 4.23.v1)	
	Number of emission days per year	20 (ESVOC 4.4a.v1, ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 7.13a.v1, ESVOC 4.23.v1)
	Continuous release(ESVOC 4.10a.v1)	
	Number of emission days per year	100 (ESVOC 4.10a.v1)
	Continuous release(ESVOC 4.5a.v1)	
	Number of emission days per year	30 (ESVOC 4.5a.v1)
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Air	0,3 (ESVOC 4.4a.v1)
	initial release prior to RMM, . (ESVOC 4.4a.v1)	
	Emission or Release Factor: Air	0,005 (ESVOC 4.5a.v1)
	initial release prior to RMM, . (ESVOC 4.5a.v1)	
	Emission or Release Factor: Air	0,0015 (ESVOC 4.6a.v1)
	initial release prior to RMM, . (ESVOC 4.6a.v1)	
	Emission or Release Factor: Air	0,006 (ESVOC 4.7a.v1)
	initial release prior to RMM, . (ESVOC 4.7a.v1)	
	Emission or Release Factor: Air	1 (ESVOC 4.9.v1)
	initial release prior to RMM, . (ESVOC 4.9.v1)	
	Emission or Release Factor: Air	0,2 (ESVOC 4.10a.v1)
	initial release prior to RMM, . (ESVOC 4.10a.v1)	
	Emission or Release Factor: Air	0,01 (ESVOC 4.19.v1)
	initial release prior to RMM, . (ESVOC 4.19.v1)	
	Emission or Release Factor: Air	0,002 (ESVOC 4.20.v1)
	initial release prior to RMM, . (ESVOC 4.20.v1)	

Emission or Release Factor: Air	0,05 (ESVOC 4.21a.v1, ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.21a.v1, ESVOC 4.23.v1)	
Emission or Release Factor: Air	0,00025 (ESVOC 7.12a.v1)
initial release prior to RMM, . (ESVOC 7.12a.v1)	
Emission or Release Factor: Air	0,005 (ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
initial release prior to RMM, . (ESVOC 4.3a.v1)	
Emission or Release Factor: Water	0,3 .10-4 (ESVOC 4.4a.v1, ESVOC 4.10a.v1, ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 4.4a.v1, ESVOC 4.10a.v1, ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,00003 (ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1)
initial release prior to RMM, . (ESVOC 4.6a.v1, ESVOC 4.7a.v1, ESVOC 4.9.v1)	
Emission or Release Factor: Water	0,0003 (ESVOC 4.19.v1, ESVOC 4.20.v1)
initial release prior to RMM, . (ESVOC 4.19.v1, ESVOC 4.20.v1)	
Emission or Release Factor: Water	0,07 (ESVOC 4.5a.v1)
initial release prior to RMM, . (ESVOC 4.5a.v1)	
Emission or Release Factor: Water	0,05 (ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.23.v1)	
Emission or Release Factor: Water	0,00001 (ESVOC 9.12b.v1)
initial release prior to RMM, . (ESVOC 9.12b.v1)	
Emission or Release Factor: Water	0,001 (ESVOC 4.6a.v1, ESVOC 7.13a.v1)
initial release prior to RMM, . (ESVOC 4.6a.v1, ESVOC 7.13a.v1)	
Emission or Release Factor: Water	0,05 (ESVOC 4.23.v1)
initial release prior to RMM, . (ESVOC 4.23.v1)	
Emission or Release Factor: Water	0,00001 (ESVOC 4.21a.v1)
initial release prior to RMM, . (ESVOC 4.21a.v1)	
Emission or Release Factor: Water	0,0001 (ESVOC 4.19.v1, ESVOC 4.20.v1)

	initial release prior to RMM, . (ESVOC 4.19.v1, ESVOC 4.20.v1)	
	Indoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	General exposures (closed systems) Continuous process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Provide extract ventilation to points where

		emissions occur.(PROC4)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to material transfer points and other openings.(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur.(PROC13)
	Laboratory activities	Handle in a fume cupboard or under extract ventilation.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves. Use suitable eye protection.(PROC7)
	Material transfers Dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC8b)
	Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.4a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.4a.v1	---	---	Msafe	376588kg/day	---
ESVOC SPERC 4.4a.v1	---	Fresh water	exposure estimate	0,000117mg/L	0,0133

ESVOC SPERC 4.4a.v1	---	Fresh water sediment	exposure estimate	0,0301mg/kg dry weight (d.w.)	0,0133
ESVOC SPERC 4.4a.v1	---	Marine water	exposure estimate	0,0000103mg/L	0,0117
ESVOC SPERC 4.4a.v1	---	Marine sediment	exposure estimate	0,00266mg/kg dry weight (d.w.)	0,0117
ESVOC SPERC 4.4a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,000287mg/L	0,000043
ESVOC SPERC 4.4a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.4a.v1	---	Agricultural soil	exposure estimate	0,00261mg/kg dry weight (d.w.)	0,0111
ESVOC SPERC 4.4a.v1	---	Air	exposure estimate	0,00229	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8b, PROC10, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC10, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3, PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,70ppm	0,284
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3, PROC7	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC4	---	Worker - inhalative, long-term	2,50ppm	0,418
PROC4, PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5, PROC13	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC7	---	Worker - dermal, short-term - local	0,0313ppm	0,194

PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC10	---	Worker - inhalative, long-term	0,56ppm	0,0936
PROC10	---	Worker - dermal, short-term - local	9,99mg/cm2	0,621
PROC13	---	Worker - inhalative, long-term	0,290ppm	0,0485
PROC15	---	Worker - inhalative, long-term	4,60ppm	0,0686

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 15: Use as a solvent	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.17.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.21b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.4b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.6c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.7c.v1 has been used to evaluate the exposure for the environment.
, ESVOC SpERC 8.23a.v1.
, ESVOC SPERC 9.7b.v1.
, ESVOC SPERC 9.24a.v1.
, ESVOC SPERC 9.24b.v1.
, ESVOC spERC 8.10b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.11a.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.6b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.12b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.13b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	3000
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 8.11a.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24a.v1, ESVOC 9.24b.v1)
	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Fraction of regional tonnage used locally:	0,002 (ESVOC 8.11a.v1)
	Fraction of regional tonnage used locally:	1 (ESVOC 9.24a.v1)
	Maximum daily site tonnage (kg/day):	0,0274 (ESVOC 8.23a.v1, ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Maximum daily site tonnage (kg/day):	0,1096 (ESVOC 8.11a.v1)
	Maximum daily site tonnage (kg/day):	66,67 (ESVOC 9.24a.v1)
	Annual site tonnage	0,01 (ESVOC 8.3b.v1, ESVOC 8.4b.v1, ESVOC 9.6b.v1, ESVOC 8.6c.v1, ESVOC 9.7b.v1, ESVOC 8.7c.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1, ESVOC 9.12b.v1, ESVOC 9.13b.v1, ESVOC 8.17.v1, ESVOC 8.21b.v1, ESVOC 9.24b.v1)
	Annual site tonnage	0,04 (ESVOC 8.11a.v1)
	Annual site tonnage	20 (ESVOC 9.24a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days	365

per year	
Wide dispersive use(ESVOC 9.24a.v1)	
Number of emission days per year	300 (ESVOC 9.24a.v1)
Emission or Release Factor: Air	0,5 (ESVOC 8.17.v1)
initial release prior to RMM, . (ESVOC 8.17.v1)	
Emission or Release Factor: Air	0,02 (ESVOC 8.4b.v1)
initial release prior to RMM, . (ESVOC 8.4b.v1)	
Emission or Release Factor: Air	0,98 (ESVOC 8.3b.v1, ESVOC 8.21b.v1)
initial release prior to RMM, . (ESVOC 8.3b.v1, ESVOC 8.21b.v1)	
Emission or Release Factor: Air	0,15 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
Emission or Release Factor: Air	1 (ESVOC 8.23a.v1)
Emission or Release Factor: Air	0,95 (ESVOC 8.10b.v1)
Emission or Release Factor: Air	0,9 (ESVOC 8.11a.v1)
Emission or Release Factor: Air	0,01 (ESVOC 9.6b.v1)
Emission or Release Factor: Air	0,05 (ESVOC 9.7b.v1)
Emission or Release Factor: Air	0,001 (ESVOC 9.12b.v1, ESVOC 9.24a.v1)
Emission or Release Factor: Air	0,05 (ESVOC 9.13b.v1)
Emission or Release Factor: Air	0,005 (ESVOC 9.24b.v1)
Emission or Release Factor: Water	0,5 (ESVOC 8.17.v1)
Emission or Release Factor: Water	0,01 (ESVOC 8.3b.v1, ESVOC 9.6b.v1, ESVOC 8.11a.v1, ESVOC 8.21b.v1)
Emission or Release Factor: Water	0,05 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
Emission or Release Factor: Water	0,025 (ESVOC 9.7b.v1, ESVOC 8.23a.v1, ESVOC 8.10b.v1)
Emission or Release Factor: Water	0,00001 (ESVOC 9.12b.v1)
Emission or Release Factor: Soil	0,01 (ESVOC 8.3b.v1, ESVOC 9.6b.v1, ESVOC 8.21b.v1)

	Emission or Release Factor: Soil	0,05 (ESVOC 8.6c.v1, ESVOC 8.7c.v1)
	Emission or Release Factor: Soil	0,09 (ESVOC 8.11a.v1)
	Emission or Release Factor: Soil	0,025 (ESVOC 9.13b.v1, ESVOC 8.10b.v1)
	Emission or Release Factor: Soil	0,00001 (ESVOC 9.12b.v1)
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion	General exposures	Handle substance within a closed system.

from source towards the worker	Closed systems	Store substance within a closed system.(PROC1)
	General exposures (closed systems) Continuous process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC2)
	Mixing operations Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)
	Batch process	Provide extract ventilation to points where emissions occur.(PROC4)
	Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur.(PROC4, PROC5)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Limit the substance content in the product to 10 %.(PROC11)
	Material transfers Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance. Limit the substance content in the product to 5 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Roller, spreader, flow application	Provide extract ventilation to points where emissions occur. Ensure operation is undertaken outdoors.(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. Ensure operation is undertaken outdoors.(PROC13)
	Laboratory activities	Handle in a fume cupboard or under extract ventilation.(PROC15)
	Material transfers Non-dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8a)
	Equipment cleaning and maintenance Non-dedicated facility	Drain or remove substance from equipment prior to break-in or maintenance. Limit the substance content in the product to 5 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.

	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC11)
Material transfers Dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC8b)
Roller, spreader, flow application	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection. Wear chemically resistant gloves.(PROC10)
Dipping, immersion and pouring	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC13)
Material transfers Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC8a)
Equipment cleaning and maintenance Non-dedicated facility	Wear chemically resistant gloves. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 9.24a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 9.24a.v1	---	---	Msafe	6638kg/day	---
ESVOC SPERC 9.24a.v1	---	Fresh water	exposure estimate	0,0000883mg/L	0,01
ESVOC SPERC 9.24a.v1	---	Fresh water sediment	exposure estimate	0,0228mg/kg dry weight (d.w.)	0,01
ESVOC SPERC 9.24a.v1	---	Marine water	exposure estimate	0,0000746mg/L	0,00848
ESVOC SPERC 9.24a.v1	---	Marine sediment	exposure estimate	0,00193mg/kg dry weight (d.w.)	0,00849
ESVOC SPERC 9.24a.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 9.24a.v1	---	Indirect exposure to humans via the	exposure estimate	---	0,000708

		environment			
ESVOC SPERC 9.24a.v1	---	Agricultural soil	exposure estimate	0,000004mg/kg dry weight (d.w.)	0,000009
ESVOC SPERC 9.24a.v1	---	Air	exposure estimate	0,0000739	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term	0,01ppm	0,00947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC2	---	Worker - inhalative, long-term	1,70ppm	0,284
PROC2	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,621
PROC3	---	Worker - inhalative, long-term	5,20ppm	0,860
PROC4	---	Worker - inhalative, long-term	0,350ppm	0,0590
PROC4, PROC8a, PROC8b, PROC13	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC5	---	Worker - inhalative, long-term	3,40ppm	0,569
PROC5	---	Worker - dermal, short-term - local	0,005mg/cm2	0,0311
PROC8a, PROC11, PROC15	---	Worker - inhalative, long-term	4,10ppm	0,686
PROC8b	---	Worker - inhalative, long-term	3,50ppm	0,332
PROC10	---	Worker - inhalative, long-term	3,10ppm	0,518
PROC10	---	Worker - dermal, short-term - local	0,02mg/cm2	0,124

PROC11	---	Worker - dermal, short-term - local	0,0313mg/cm2	0,194
PROC13	---	Worker - inhalative, long-term	0,290ppm	0,0452
PROC15	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,0155

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 16: Use as a solvent	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC15: Non-metal-surface treatment products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems
Activity	Use as process solvent or extraction agent. Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container)

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.4b.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 8.6e.v1 has been used to evaluate the exposure for the environment.
, ESVOC SpERC 8.23b.v1.
, ESVOC spERC 8.16.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.6d.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.12c.v1 has been used to evaluate the exposure for the environment.
, ESVOC spERC 9.13c.v1 has been used to evaluate the exposure for the environment.
, ESVOC SPERC 9.24c.v1.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	1800
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	20 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 9.6d.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.12c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1, ESVOC 9.24c.v1)
	Fraction of regional tonnage used locally:	0,0005 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 9.6d.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1, ESVOC 9.12c.v1, ESVOC 9.24c.v1)
	Maximum daily site tonnage (kg/day):	0,00274 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 8.16.v1, ESVOC 9.6d.v1, ESVOC 9.12c.v1, ESVOC 9.13c.v1, ESVOC 9.24c.v1)
	Annual site tonnage	0,01 (ESVOC 8.3c.v1, ESVOC 8.4c.v1, ESVOC 8.6e.v1, ESVOC 8.23b.v1, ESVOC 9.6d.v1,

		ESVOC 9.12c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1, ESVOC 9.24c.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,95 (ESVOC 8.4c.v1, ESVOC 8.16.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 8.16.v1)	
	Emission or Release Factor: Air	0,98 (ESVOC 8.3c.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1)	
	Emission or Release Factor: Air	0,15 (ESVOC 8.6e.v1)
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Air	1 (ESVOC 8.23b.v1)
	initial release prior to RMM, . (ESVOC 8.23b.v1)	
	Emission or Release Factor: Air	0,01 (ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 9.6d.v1)	
	Emission or Release Factor: Air	0,0001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Emission or Release Factor: Air	0,05 (ESVOC 9.13c.v1)
	initial release prior to RMM, . (ESVOC 9.13c.v1)	
	Emission or Release Factor: Air	0,005 (ESVOC 9.24c.v1)
	initial release prior to RMM, . (ESVOC 9.24c.v1)	
	Emission or Release Factor: Water	0,025 (ESVOC 8.4c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 8.16.v1, ESVOC 9.13c.v1)	
	Emission or Release Factor: Water	0,01 (ESVOC 8.3c.v1, ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1, ESVOC 9.6d.v1)	
	Emission or Release	0,05 (ESVOC 8.6e.v1)

	Factor: Water	
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Water	0,00001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Emission or Release Factor: Soil	0,025 (ESVOC 8.4c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1)
	initial release prior to RMM, . (ESVOC 8.4c.v1, ESVOC 9.13c.v1, ESVOC 8.16.v1)	
	Emission or Release Factor: Soil	0,005 (ESVOC 8.3c.v1)
	initial release prior to RMM, . (ESVOC 8.3c.v1)	
	Emission or Release Factor: Soil	0,05 (ESVOC 8.6e.v1)
	initial release prior to RMM, . (ESVOC 8.6e.v1)	
	Emission or Release Factor: Soil	0,01 (ESVOC 9.6d.v1)
	initial release prior to RMM, . (ESVOC 9.6d.v1)	
	Emission or Release Factor: Soil	0,00001 (ESVOC 9.12c.v1)
	initial release prior to RMM, . (ESVOC 9.12c.v1)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC15

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	1000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000888mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0229mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00854
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00855
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001

ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000168mg/kg dry weight (d.w.)	0,000133
ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000739	---

Consumers

PC15: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC15	---	Consumer - inhalative, long-term - systemic	0,0174ppm	0,0112
PC15	---	consumer dermal, acute - local	0,0211mg/cm2	0,914

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 17: Use as a chemical stripper	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, CEPE SPERC 4.na.v1.
, CEPE SPERC 4.nb.v1.
, ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.
, For more information on spERC from the Coatings & Inks sector, please visit the website: www.cepe.org.

Amount used	Amounts used in the EU (tonnes/year)	300
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
	Fraction of regional tonnage used locally:	1 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
	Maximum daily site tonnage (kg/day):	455 (CEPE 4.1a.v1, CEPE 8a.n.v1)
	Maximum daily site tonnage (kg/day):	333,3 (ESVOC 4.3a.v1)
	Annual site tonnage	100 (CEPE 4.1a.v1, CEPE 8a.n.v1, ESVOC 4.3a.v1)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100

Other given operational conditions affecting environmental exposure	Continuous release(CEPE 4.1a.v1, CEPE 4.1b.v1)	
	Number of emission days per year	220 (CEPE 4.1a.v1, CEPE 4.1b.v1)
	Continuous release(ESVOC 4.3a.v1)	
	Number of emission days per year	300 (ESVOC 4.3a.v1)
	Emission or Release Factor: Air	0,8 (CEPE 4.1a.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1)	
	Emission or Release Factor: Air	0,98 (CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 8a.n.v1)	
	Emission or Release Factor: Air	0,098 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Water	0,02 (CEPE 4.1a.v1, CEPE 8a.n.v1)
	initial release prior to RMM, . (CEPE 4.1a.v1, CEPE 8a.n.v1)	
	Emission or Release Factor: Water	0,0007 (ESVOC 4.3a.v1)
	initial release prior to RMM, . (ESVOC 4.3a.v1)	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1a.v1)

	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1a.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1a.v1)
	Percentage removed from waste water	99 % (only CEPE 4.1a.v1)
	Type of Sewage Treatment Plant	Municipal sewage treatment plant (only CEPE 4.1b.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only CEPE 4.1b.v1)
	Degradation efficiency	96,2 % (only CEPE 4.1b.v1)
	Percentage removed from waste water	95 % (only CEPE 4.1b.v1)
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC21, PROC24		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	Disposal of wastes Transfer of process wastes to storage containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a, PROC8b)
	Preparation of material for application (emitted dust)	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur.(PROC21)
	Operation and lubrication of high energy open equipment (emitted dust)	Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC24)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 4.3a.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.

ESVOC SPERC 4.3a.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 4.3a.v1	---	---	Msafe	3107kg/day	---
ESVOC SPERC 4.3a.v1	---	Fresh water	exposure estimate	0,000532mg/L	0,0605
ESVOC SPERC 4.3a.v1	---	Fresh water sediment	exposure estimate	0,137mg/kg dry weight (d.w.)	0,0605
ESVOC SPERC 4.3a.v1	---	Marine water	exposure estimate	0,0000519mg/L	0,0589
ESVOC SPERC 4.3a.v1	---	Marine sediment	exposure estimate	0,0134mg/kg dry weight (d.w.)	0,059
ESVOC SPERC 4.3a.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00446mg/L	0,000675
ESVOC SPERC 4.3a.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 4.3a.v1	---	Agricultural soil	exposure estimate	0,0116mg/kg dry weight (d.w.)	0,107
ESVOC SPERC 4.3a.v1	---	Air	exposure estimate	0,00753	---

Workers

PROC8b, PROC21, PROC24: Advanced REACH Tool (ART model) (inhalative exposure)

PROC8a, PROC8b, PROC21, PROC24: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	---	Worker - inhalative, long-term - systemic	0,09ppm	0,0151
PROC8b	---	Worker - inhalative, long-term	0,09ppm	0,0853
PROC21	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC8a	---	Worker - dermal, short-	0,06mg/cm2	0,373

		term - local		
PROC21	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC24	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC24	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 18: Use as a chemical stripper	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3b.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,98
	initial release prior to RMM, .	

	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,01
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC21, PROC24

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	

Technical conditions and measures to control dispersion from source towards the worker	Disposal of wastes Transfer of process wastes to storage containers	Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 15 minutes.(PROC8a, PROC8b)
	Preparation of material for application Low energy spreading using hand held tools	Limit the substance content in the product to 10 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC21)
	Preparation of material for application Operation and lubrication of high energy open equipment (emitted dust)	Limit the substance content in the product to 10 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 15 minutes.(PROC24)
Conditions and measures related to personal protection, hygiene and health evaluation	Preparation of material for application Low energy spreading using hand held tools	Use suitable eye protection. Wear chemically resistant gloves.(PROC21)

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3b.v1: Environmental exposure estimation is based on Ecetoc TRA model v2.

ESVOC SPERC 8.3b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3b.v1	---	---	Msafe	1,4kg/day	---
ESVOC SPERC 8.3b.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3b.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3b.v1	---	Marine water	exposure estimate	0,0000754mg/L	0,00857
ESVOC SPERC 8.3b.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0000026mg/L	< 0,001
ESVOC SPERC 8.3b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC	---	Agricultural soil	exposure	0,0000104mg/	0,000071

8.3b.v1			estimate	kg dry weight (d.w.)	
ESVOC SPERC 8.3b.v1	---	Air	exposure estimate	0,0000743	---

Workers

PROC8a, PROC8b, PROC21, PROC24: Advanced REACH Tool (ART model) (inhalative exposure)
PROC8a, PROC8b, PROC21, PROC24: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	---	Worker - inhalative, long-term	0,09ppm	0,0151
PROC8a	---	Worker - dermal, short-term - local	0,06mg/cm2	0,373
PROC8b	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC8b	---	Worker - dermal, short-term - local	0,03mg/cm2	0,186
PROC21	---	Worker - inhalative, long-term	0,660ppm	0,110
PROC21	---	Worker - dermal, short-term - local	0,0124mg/cm2	0,0769
PROC24	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC24	---	Worker - dermal, short-term - local	0,0247mg/cm2	0,154

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 19: Use as a chemical stripper	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, ESVOC spERC 8.3c.v1 has been used to evaluate the exposure for the environment.
, For more information on ESVOC spERC from the Solvents sector, please visit the website: www.esig.org.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	10
	Fraction of regional tonnage used locally:	0,0005
	Maximum daily site tonnage (kg/day):	0,0137
	Annual site tonnage	0,005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	0,985
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,01
	initial release prior to RMM, .	
	Emission or Release	0,005

	Factor: Soil	
	initial release prior to RMM, .	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC9a		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 0,25%
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 days/year
	Exposure duration per event	2,20 h
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,50 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
Conditions and measures related to protection of consumer (e.g.	No specific risk management measure identified beyond those operational	

behavioural advice, personal protection and hygiene)	conditions stated.

3. Exposure estimation and reference to its source

Environment

ESVOC SPERC 8.3c.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ESVOC SPERC 8.3c.v1	---	Fresh water	exposure estimate	0,0000892mg/L	0,0101
ESVOC SPERC 8.3c.v1	---	Fresh water sediment	exposure estimate	0,0230mg/kg dry weight (d.w.)	0,0101
ESVOC SPERC 8.3c.v1	---	Marine water	exposure estimate	0,0000075mg/L	0,00857
ESVOC SPERC 8.3c.v1	---	Marine sediment	exposure estimate	0,00195mg/kg dry weight (d.w.)	0,00858
ESVOC SPERC 8.3c.v1	---	Sewage treatment plant (STP)	exposure estimate	< 0,0001mg/L	< 0,0001
ESVOC SPERC 8.3c.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ESVOC SPERC 8.3c.v1	---	Agricultural soil	exposure estimate	0,0000104mg/kg dry weight (d.w.)	0,000071
ESVOC SPERC 8.3c.v1	---	Air	exposure estimate	0,0000743	---

Consumers

PC9a: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC9a	---	consumer dermal, acute - local	0,0194mg/cm2	0,914
PC9a	---	Consumer - inhalative, long-term - systemic	0,120ppm	0,0837

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may

be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 20: Use in the compounding of fragrances	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Transport and Distribution, This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.

Amount used	Amounts used in the EU (tonnes/year)	80
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	80
	Fraction of regional tonnage used locally:	0,15
	Maximum daily site tonnage (kg/day):	48
	Annual site tonnage	12
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10

	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	250
	Emission or Release Factor: Air	0,025
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,02
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,0001
	initial release prior to RMM, .	
	Emission or Release Factor: Air	0,025
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Water	0,001
	based on initial default values with subsequent RMM, .	
	Emission or Release Factor: Soil	0,0001
	based on initial default values with subsequent RMM, .	
	Indoor use	
Technical conditions and measures at process level to prevent release	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.

	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system.(PROC1)
	Material transfers Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC3)
	Mixing operations Batch process With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC3)
	Filling/ preparation of equipment from drums or containers. Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC5)
	Mixing operations (open systems) Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Avoid carrying out operation for more than 1 hour. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC8b)
	Process sampling	Limit the substance content in the product to 25 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation. Avoid carrying out operation for more than 1

		hour.(PROC8b)
	Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Equipment cleaning and maintenance	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 5 %. Drain down system prior to equipment opening or maintenance.(PROC8b)
	Drum and small package filling	Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC9)
	Laboratory activities	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Process sampling	Use suitable eye protection and gloves.(PROC3)
	Filling/ preparation of equipment from drums or containers. Batch process	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Mixing operations (open systems) Batch process	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Process sampling	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Drum and small package filling	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC9)

3. Exposure estimation and reference to its source

Environment

ERC2: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	---	---	Msafe	375kg/day	---
ERC2	---	Fresh water	exposure estimate	0,000849mg/L	0,0965
ERC2	---	Fresh water sediment	exposure estimate	0,219mg/kg dry weight (d.w.)	0,0966
ERC2	---	Marine water	exposure estimate	0,0000836mg/L	0,095
ERC2	---	Marine sediment	exposure estimate	0,0216mg/kg dry weight (d.w.)	0,0951
ERC2	---	Sewage treatment plant (STP)	exposure estimate	0,00764mg/L	0,00116
ERC2	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC2	---	Agricultural soil	exposure estimate	0,0189mg/kg dry weight (d.w.)	0,182
ERC2	---	Air	exposure estimate	0,00197	---

Workers

PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

PROC1, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01ppm	0,00947
PROC1, PROC3	---	Worker - dermal, short-term - local	0,0250mg/cm2	0,155
PROC3	---	Worker - inhalative, long-term	4,20ppm	0,702
PROC8a, PROC8b	---	Worker - inhalative, long-term	1,80ppm	0,301
PROC5	---	Worker - inhalative, long-term	1,1ppm	0,184

PROC5, PROC8a, PROC8b	---	Worker - dermal, short-term - local	0,0999ppm	0,621
PROC15	---	Worker - inhalative, long-term	8,40ppm	0,796
PROC15	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0932
PROC9	---	Worker - inhalative, long-term	0,6ppm	0,568
PROC9	---	Worker - dermal, short-term - local	0,06mg/cm2	0,0373

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 21: Formulation of fragrances	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC2

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 2.1.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.d.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.e.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.f.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.g.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.i.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.1.j.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.3.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.3.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.2.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 2.2.c.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.b.v1 has been used to evaluate the exposure for the environment.

, AISE spERC 2.1.c.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.e.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.f.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.k.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.l.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.h.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 2.1.i.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	2000
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100 (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1, AISE 2.1.h.v1, AISE 2.1.i.v1, AISE 2.1.k.v1, AISE 2.1.l.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.h.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.3.c.v1, COLIPA 2.1.i.v1)
	Fraction of regional tonnage used locally:	1 (AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE 2.1.k.v1, COLIPA 2.1.b.v1, COLIPA 2.1.d.v1, COLIPA 2.1.f.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)
	Fraction of regional tonnage used locally:	0,0220 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1, COLIPA 2.3.c.v1)
	Fraction of regional tonnage used locally:	0,020 (AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
	Maximum daily site tonnage (kg/day):	10 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
	Maximum daily site tonnage (kg/day):	454,55 (COLIPA 2.1.b.v1, COLIPA 2.1.i.v1)
	Maximum daily site tonnage (kg/day):	455 (COLIPA 2.1.d.v1, COLIPA 2.1.f.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE 2.1.k.v1)
	Annual site tonnage	100 (COLIPA 2.1.b.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.2.b.v1, COLIPA 2.3.b.v1, AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, AISE

		2.1.k.v1, COLIPA 2.1.i.v1)
	Annual site tonnage	2,2 (COLIPA 2.1.c.v1, COLIPA 2.1.e.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.c.v1)
	Annual site tonnage	0,2 (COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1)
Frequency and duration of use	Continuous exposure	Continuous release
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release(AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)	
	Number of emission days per year	220 (AISE 2.1.b.v1, AISE 2.1.e.v1, AISE 2.1.h.v1, COLIPA 2.1.b.v1, COLIPA 2.1.c.v1, COLIPA 2.1.d.v1, COLIPA 2.1.e.v1, COLIPA 2.1.f.v1, COLIPA 2.1.g.v1, COLIPA 2.1.j.v1, COLIPA 2.2.b.v1, COLIPA 2.2.c.v1, COLIPA 2.3.b.v1, COLIPA 2.1.i.v1)
	Continuous release(AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1, COLIPA 2.3.c.v1)	
	Number of emission days per year	20 (AISE 2.1.c.v1, AISE 2.1.f.v1, AISE 2.1.i.v1, AISE 2.1.l.v1, COLIPA 2.3.c.v1)
	Emission or Release Factor: Air	0,0002 (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	initial release prior to RMM, . (AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)	
	Emission or Release Factor: Water	0,002 (COLIPA 2.1.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.i.v1, AISE 2.1.k.v1)
	initial release prior to RMM, . (COLIPA 2.1.b.v1, COLIPA 2.3.c.v1, AISE 2.1.c.v1, AISE 2.1.i.v1, AISE 2.1.k.v1)	
	Emission or Release Factor: Water	0,004 (AISE 2.1.l.v1, COLIPA 2.1.c.v1)
	based on initial default values with subsequent RMM, . (AISE 2.1.l.v1, COLIPA 2.1.c.v1)	
	Emission or Release Factor: Water	0,03 (COLIPA 2.1.e.v1)
	Emission or Release Factor: Water	0,015 (COLIPA 2.1.d.v1)
	based on initial default values with subsequent RMM, . (COLIPA 2.1.d.v1)	
	Emission or Release Factor: Water	0,01 (COLIPA 2.1.f.v1)

	based on initial default values with subsequent RMM, . (COLIPA 2.1.f.v1)	
	Emission or Release Factor: Water	0,02 (COLIPA 2.1.g.v1, COLIPA 2.1.i.v1)
	initial release prior to RMM, . (COLIPA 2.1.g.v1, COLIPA 2.1.i.v1)	
	Emission or Release Factor: Water	0,04 (COLIPA 2.1.j.v1)
	Emission or Release Factor: Water	0,001 (AISE 2.1.b.v1, AISE 2.1.h.v1, COLIPA 2.3.b.v1)
	Emission or Release Factor: Water	0,0002 (AISE 2.1.f.v1)
	Emission or Release Factor: Water	0,0001 (AISE 2.1.e.v1)
	Indoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Domestic sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
	Type of Sewage Treatment Plant	Domestic sewage treatment plant (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Flow rate of sewage treatment plant effluent	2.000 m3/d (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Degradation efficiency	99 % (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
	Percentage removed from waste water	99 % (only AISE 2.1.b.v1, AISE 2.1.c.v1, AISE 2.1.e.v1, AISE 2.1.f.v1)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system. Store substance within a closed system. Limit the substance content in the product to 25 %.(PROC1)
	Initial factory fill of equipment Continuous process With sample collection	Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC2, PROC9)
	Material transfers With sample collection	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %.(PROC1, PROC2, PROC3)
	Mixing operations Continuous process With sample collection	Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %. Provide extract ventilation to points where emissions occur.(PROC3)
	Mixing operations	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours. Limit the substance content in the product to 25 %.(PROC4)
	Mixing operations (open systems) Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 4 hours.(PROC5)
	Filling/ preparation of equipment from drums or containers. Batch process	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 4 hours.(PROC5)
	Transfer from/pouring from containers	Limit the substance content in the product to 25 %. Avoid carrying out operation for more than 1 hour.

With sample collection Non-dedicated facility	Provide extract ventilation to material transfer points and other openings.(PROC8a)
Transfer from/pouring from containers With sample collection Dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %.(PROC8b)
Equipment cleaning and maintenance	Limit the substance content in the product to 5 %. Provide extract ventilation to points where emissions occur. Avoid carrying out operation for more than 1 hour.(PROC8b)
Drum and small package filling Non-dedicated facility	Avoid carrying out operation for more than 1 hour. Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings.(PROC9, PROC8a)
Drum and small package filling Dedicated facility	Limit the substance content in the product to 1 %. Provide extract ventilation to material transfer points and other openings. Avoid carrying out operation for more than 4 hours.(PROC9, PROC8b)
Small package filling	Limit the substance content in the product to 1 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
Drum and small package filling Bulk transfers Dedicated facility	Limit the substance content in the product to 25 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC9, PROC8b)
Small package filling	Limit the substance content in the product to 1 %. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
Dipping, immersion and pouring	Limit the substance content in the product to 1 %. Provide extract ventilation to points where emissions occur.(PROC13)
Production of articles by dipping and pouring	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC13)
Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC14)
Process sampling	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not

		less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC8b)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems) Batch process	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.(PROC5)
	Filling/ preparation of equipment from drums or containers.	Wear chemically resistant gloves. Use suitable eye protection.(PROC5)
	Transfer from/pouring from containers With sample collection Non-dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8a)
	Transfer from/pouring from containers With sample collection Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC8b)
	Drum and small package filling Non-dedicated facility	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC9, PROC8a)
	Drum and small package filling Bulk transfers Dedicated facility	Wear chemically resistant gloves. Use suitable eye protection.(PROC9, PROC8b)

3. Exposure estimation and reference to its source

Environment

AISE SPERC 2.1.b.v1, COLIPA SPERC 2.1.b.v1: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
COLIPA SPERC 2.1.b.v1	---	---	Msafe	1102kg/day	---
COLIPA SPERC 2.1.b.v1	---	Fresh water	exposure estimate	0,00182mg/L	0,207
COLIPA SPERC 2.1.b.v1	---	Fresh water sediment	exposure estimate	0,470mg/kg dry weight (d.w.)	0,207
COLIPA SPERC 2.1.b.v1	---	Marine water	exposure estimate	0,000180mg/L	0,205

COLIPA SPERC 2.1.b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,0174mg/L	0,00263
COLIPA SPERC 2.1.b.v1	---	Marine sediment	exposure estimate	0,0466mg/kg dry weight (d.w.)	0,205
COLIPA SPERC 2.1.b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
COLIPA SPERC 2.1.b.v1	---	Agricultural soil	exposure estimate	0,0426mg/kg dry weight (d.w.)	0,413
COLIPA SPERC 2.1.b.v1	---	Air	exposure estimate	0,00197	---
AISE SPERC 2.1.b.v1	---	Fresh water	exposure estimate	0,000953mg/L	0,108
AISE SPERC 2.1.b.v1	---	Fresh water sediment	exposure estimate	0,246mg/kg dry weight (d.w.)	0,108
AISE SPERC 2.1.b.v1	---	Marine water	exposure estimate	0,0000940mg/L	0,107
AISE SPERC 2.1.b.v1	---	Marine sediment	exposure estimate	0,0243mg/kg dry weight (d.w.)	0,107
AISE SPERC 2.1.b.v1	---	Sewage treatment plant (STP)	exposure estimate	0,00868mg/L	0,00132
AISE SPERC 2.1.b.v1	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000704
AISE SPERC 2.1.b.v1	---	Agricultural soil	exposure estimate	0,0213mg/kg dry weight (d.w.)	0,206
AISE SPERC 2.1.b.v1	---	Air	exposure estimate	0,000105	---

Workers

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14: ECETOC TRA model v2

PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,006ppm	0,00568
PROC1	---	Worker - dermal, short-term - local	0,0150mg/cm2	0,0799

PROC2, PROC3	---	Worker - inhalative, long-term	3,1ppm	0,518
PROC2, PROC8b	---	Worker - dermal, short-term - local	0,06mg/cm2	0,319
PROC3	---	Worker - dermal, short-term - local	0,0129mg/cm2	0,0799
PROC5	---	Worker - inhalative, long-term	3,3ppm	0,552
PROC5	---	Worker - dermal, short-term - local	0,12mg/cm2	0,639
PROC8a	---	Worker - inhalative, long-term	5,0ppm	0,836
PROC8a, PROC13	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,532
PROC9	---	Worker - dermal, short-term - local	0,05mg/cm2	0,266
PROC8b	---	Worker - inhalative, long-term	5,3ppm	0,886
PROC9	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC13	---	Worker - inhalative, long-term	4,7ppm	0,786
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,133
PROC15	---	Worker - inhalative, long-term	0,140ppm	0,133
---	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 22: Use of fragrances

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities., This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC4

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, AISE spERC 4.1.v1 has been used to evaluate the exposure for the environment.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	100
	Fraction of EU tonnage used in region:	1
	Regional use tonnage (tons/year):	100
	Fraction of regional tonnage used locally:	0,01
	Maximum daily site tonnage (kg/day):	23

	Annual site tonnage	1
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Continuous release	
	Number of emission days per year	220
	Emission or Release Factor: Air	0
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0
	initial release prior to RMM, .	
	Indoor use Process with efficient use of raw materials. Volatile compounds subject to air emission controls. Application of the STP sludge on agricultural soil	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Disposal methods	(Efficiency: > 90 %) (Waste water treatment ERC4)
Conditions and measures related to external recovery of waste	Recovery Methods	External treatment and disposal of waste should comply with applicable local and/or national regulations.
	Recovery Methods	External recovery and recycling of waste should

		comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Limit the substance content in the product to 1 %. Handle substance within a closed system. Store substance within a closed system.(PROC1, PROC2)
	Continuous process With sample collection	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC2)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.(PROC4, PROC8a)
	Semi-automatic process	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC4)
	Mixing operations (open systems)	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4)
	Spraying	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC7)
	Material transfers Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 15 minutes. Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC8a)

	Material transfers	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Ensure operation is undertaken outdoors.(PROC8a)
	Material transfers Dedicated facility	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Mixing operations Mixing operations (open systems) Batch process	Provide extract ventilation to points where emissions occur. Limit the substance content in the product to 1 %.(PROC3, PROC5)
	Rolling, Brushing	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4 hours.(PROC10)
	Batch process	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC4)
	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves. Use suitable eye protection.(PROC7)
	Rolling, Brushing	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)

3. Exposure estimation and reference to its source

Environment

ERC4: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	---	---	Msafe	210241kg/day	---
ERC4	---	Fresh water	exposure estimate	0,000954mg/L	0,108

ERC4	---	Fresh water sediment	exposure estimate	0,246mg/kg dry weight (d.w.)	0,109
ERC4	---	Marine water	exposure estimate	0,0000940mg/L	0,107
ERC4	---	Marine sediment	exposure estimate	0,0243mg/kg dry weight (d.w.)	0,107
ERC4	---	Sewage treatment plant (STP)	exposure estimate	0,00868mg/L	0,00132
ERC4	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC4	---	Agricultural soil	exposure estimate	0,0213mg/kg dry weight (d.w.)	0,206
ERC4	---	Air	exposure estimate	0,000112	---

Workers

PROC1, PROC2, PROC4, PROC5, PROC7, PROC8a, PROC10, PROC14, PROC15, PROC19: ECETOC TRA model v2

PROC2, PROC4, PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,001ppm	0,000947
PROC1, PROC15	---	Worker - dermal, short-term - local	0,0025mg/cm2	0,0155
PROC2	---	Worker - inhalative, long-term	0,07ppm	0,0663
PROC2	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,062
PROC4	---	Worker - inhalative, long-term	1,2ppm	0,21
PROC4	---	Worker - dermal, short-term - local	0,05mg/cm2	0,311
PROC7	---	Worker - inhalative, long-term	5,2ppm	0,87
PROC7	---	Worker - dermal, short-term - local	0,0625ppm	0,388
PROC8a, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663

PROC8a	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,62
PROC10	---	Worker - inhalative, long-term	0,3ppm	0,284
PROC10	---	Worker - dermal, short-term - local	0,04mg/cm2	0,248
PROC13	---	Worker - inhalative, long-term	4,7ppm	0,786
PROC14	---	Worker - inhalative, long-term	0,5ppm	0,474
PROC14	---	Worker - dermal, short-term - local	0,025mg/cm2	0,133
PROC15	---	Worker - inhalative, long-term	0,140ppm	0,133
---	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133
PROC5	---	Worker - inhalative, long-term	0,67ppm	0,112
PROC5	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,62
PROC19	---	Worker - inhalative, long-term	2,2ppm	0,368
PROC19	---	Worker - dermal, short-term - local	0,103mg/cm2	0,640

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 23: Use of fragrances

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
Activity	This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC10b, ERC11b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	900

	Fraction of EU tonnage used in region:	0,053 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,04 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,1 (ERC8d, ERC10b, ERC11b)
	Regional use tonnage (tons/year):	5,3 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Regional use tonnage (tons/year):	4 (AISE 8a.1.b.v1, AISE 8a.1.c.v1, AISE 8a.1.a.v1)
	Regional use tonnage (tons/year):	10 (ERC10b, ERC11b, ERC8d)
	Fraction of regional tonnage used locally:	0,00075 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of regional tonnage used locally:	0,002 (ERC8d, ERC10b, ERC11b)
	Maximum daily site tonnage (kg/day):	0,0109 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0041 (AISE 8a.1.a.v1)
	Maximum daily site tonnage (kg/day):	0,0082 (ERC8d, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0548 (ERC10b, ERC11b)
	Annual site tonnage	0,003975 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Annual site tonnage	0,0015 (AISE 8a.1.a.v1)
	Annual site tonnage	0,003 (AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Annual site tonnage	0,03 (ERC8d)
	Annual site tonnage	0,02 (ERC10b, ERC11b)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	1 (AISE 8a.1.c.v1, ERC8d, ERC10b, ERC11b, COLIPA 8a.1.b.v1)
	initial release prior to RMM, . (AISE 8a.1.c.v1, ERC8d, ERC10b, ERC11b, COLIPA 8a.1.b.v1)	

	Emission or Release Factor: Water	1 (ERC8d, ERC10b, ERC11b, AISE 8a.1.a.v1, AISE 8a.1.b.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1)
	initial release prior to RMM, . (ERC8d, ERC10b, ERC11b, AISE 8a.1.a.v1, AISE 8a.1.b.v1, COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1)	
	Emission or Release Factor: Soil	0,2 (ERC8d)
	initial release prior to RMM, . (ERC8d)	
	Emission or Release Factor: Soil	1 (ERC10b)
	initial release prior to RMM, . (ERC10b)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	

Human factors not influenced by risk management	Assumes activities are at ambient temperature.	
	Assumes a good basic standard of occupational hygiene is implemented.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Limit the substance content in the product to 1 %. Handle substance within a closed system. Store substance within a closed system.(PROC1, PROC2)
	Material transfers Semi-automatic process Non-dedicated facility	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour.(PROC8a)
	Material transfers Manual Non-dedicated facility	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Provide extract ventilation to material transfer points and other openings.(PROC8a)
	Continuous process	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC2)
	Semi-automatic process Use in closed batch process (synthesis or formulation)	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC4)
	Material transfers Non-dedicated facility	Limit the substance content in the product to 1 %. Avoid carrying out operation for more than 1 hour. Provide extract ventilation to material transfer points and other openings.(PROC4, PROC8a)
	Surfaces Non-dedicated facility	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.(PROC10, PROC8a)
	Spraying	Limit the substance content in the product to 1 %. Ensure operation is undertaken outdoors.(PROC11)
	Material transfers Dedicated facility	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 15 minutes.(PROC8b)
	Surfaces Cleaning	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC10)
	Rolling, Brushing	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 4

		hours.(PROC10)
	Spraying	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out operation for more than 1 hour.(PROC11)
	Laboratory activities	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC15)
	Mixing operations (open systems)	Limit the substance content in the product to 1 %. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4, PROC5)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC11)
	Surfaces Cleaning	Wear chemically resistant gloves. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC10)
	Rolling, Brushing	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC10)
	Spraying	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a respirator conforming to EN140 with Type A/P2 filter or better. Use suitable eye protection.(PROC11)
	Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.(PROC4, PROC5)

3. Exposure estimation and reference to its source

Environment

ERC8d, ERC10b, ERC11b: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8d	---	Fresh water	exposure estimate	0,000245mg/L	0,0279
ERC8d	---	Fresh water	exposure	0,0634mg/kg	0,0279

		sediment	estimate	dry weight (d.w.)	
ERC8d	---	Marine water	exposure estimate	0,0000232mg/L	0,0263
ERC8d	---	Marine sediment	exposure estimate	0,00598mg/kg dry weight (d.w.)	0,00264
ERC8d	---	Sewage treatment plant (STP)	exposure estimate	0,00157mg/L	0,000238
ERC8d	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC8d	---	Agricultural soil	exposure estimate	0,00386mg/kg dry weight (d.w.)	0,00373
ERC8d	---	Air	exposure estimate	0,0000855	---
ERC10b, ERC11b	---	Fresh water	exposure estimate	0,000193mg/L	0,0220
ERC10b, ERC11b	---	Fresh water sediment	exposure estimate	0,0499mg/kg dry weight (d.w.)	0,020
ERC10b, ERC11b	---	Marine water	exposure estimate	0,0000179mg/L	0,0204
ERC10b, ERC11b	---	Marine sediment	exposure estimate	0,000464mg/kg dry weight (d.w.)	0,0204
ERC10b, ERC11b	---	Sewage treatment plant (STP)	exposure estimate	0,00105mg/L	0,000159
ERC10b, ERC11b	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC10b, ERC11b	---	Agricultural soil	exposure estimate	0,00257mg/kg dry weight (d.w.)	0,0249
ERC10b, ERC11b	---	Air	exposure estimate	0,0000818	---

Workers

PROC1, PROC2, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19: ECETOC TRA model v2

PROC1, PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC15, PROC19: Advanced REACH Tool (ART model) (inhalative exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	---	Worker - inhalative, long-term - systemic	0,001ppm	0,000974
PROC1	---	Worker - dermal, short-term - local	0,00250mg/cm2	0,0133
PROC2	---	Worker - inhalative, long-term	0,140ppm	0,133
PROC2	---	Worker - dermal, short-term - local	0,00999mg/cm2	0,0532
PROC5	---	Worker - inhalative, long-term	0,670ppm	0,112
PROC4	---	Worker - inhalative, long-term	1,2ppm	0,201
PROC5, PROC8a	---	Worker - dermal, short-term - local	0,0999mg/cm2	0,532
PROC8a, PROC10, PROC11, PROC15	---	Worker - inhalative, long-term	0,7ppm	0,663
PROC8b	---	Worker - inhalative, long-term	0,350ppm	0,332
PROC8b	---	Worker - dermal, short-term - local	0,05mg/cm2	0,266
PROC10	---	Worker - dermal, short-term - local	0,04mg/cm2	0,213
PROC11	---	Worker - dermal, short-term - local	0,0781mg/cm2	0,832
PROC15	---	Worker - dermal, short-term - local	0,00250ppm	0,0133
PROC19	---	Worker - inhalative, long-term	2,20ppm	0,368
PROC19	---	Worker - dermal, short-term - local	0,103mg/cm2	0,549

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 24: Use of fragrances

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants PC3: Air care products PC8: Biocidal products (e.g. Disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC13: Fuels PC18: Ink and toners PC28: Perfumes, fragrances PC31: Polishes and wax blends PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products PC39: Cosmetics, personal care products
Article categories	AC0: Other AC31: Scented clothes AC34: Scented Toys AC35: Scented paper articles
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
Activity	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products., This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC10b, ERC11b

Substance is complex UVCB, Non-hydrophobic.
, Readily biodegradable.
, COLIPA SpERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, COLIPA SpERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.a.v1 has been used to evaluate the exposure for the environment.
, AISE spERC 8a.1.b.v1 has been used to evaluate the exposure for the environment.
, AISE SPERC 8a.1.c.v1 has been used to evaluate the exposure for the environment.
, For more information on COLIPA spERC from the cosmetic sector, please visit the website: www.cosmeticseurope.eu.
, For more information on AISE spERC from the Detergents, Cleaning & Maintenance sector, please visit

the website: www.aise.eu.

Amount used	Amounts used in the EU (tonnes/year)	950
	Fraction of EU tonnage used in region:	0,053 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,04 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Fraction of EU tonnage used in region:	0,1 (ERC8d, ERC10b, ERC11b)
	Regional use tonnage (tons/year):	5,3 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Regional use tonnage (tons/year):	4 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Regional use tonnage (tons/year):	10 (ERC8d, ERC10b, ERC11b)
	Fraction of regional tonnage used locally:	0,00075
	Maximum daily site tonnage (kg/day):	0,0109 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0082 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Maximum daily site tonnage (kg/day):	0,0548 (ERC8d, ERC10b, ERC11b)
	Annual site tonnage	0,004 (COLIPA 8a.1.a.v1, COLIPA 8a.1.b.v1, COLIPA 8a.1.c.v1)
	Annual site tonnage	0,003 (AISE 8a.1.a.v1, AISE 8a.1.b.v1, AISE 8a.1.c.v1)
	Annual site tonnage	0,02 (ERC8d, ERC10b, ERC11b)
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Wide dispersive use	
	Number of emission days per year	365
	Emission or Release Factor: Air	1 (AISE 8a.1.c.v1, COLIPA 8a.1.b.v1, ERC8d, ERC10b, ERC11b)
	initial release prior to RMM, . (AISE 8a.1.c.v1, COLIPA 8a.1.b.v1, ERC8d, ERC10b, ERC11b)	
	Emission or Release Factor: Water	1 (COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1, AISE 8a.1.a.v1, AISE 8a.1.b.v1, ERC8d, ERC10b,

		ERC11b)
	initial release prior to RMM, . (COLIPA 8a.1.a.v1, COLIPA 8a.1.c.v1, AISE 8a.1.a.v1, AISE 8a.1.b.v1, ERC8d, ERC10b, ERC11b)	
	Emission or Release Factor: Soil	1 (ERC10b)
	initial release prior to RMM, . (ERC10b)	
	Emission or Release Factor: Soil	0,2 (ERC8d)
	initial release prior to RMM, . (ERC8d)	
	Indoor or outdoor use	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Prevent environmental discharge consistent with regulatory requirements. Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	96,2 %
	Percentage removed from waste water	96,2 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	Recovery Methods	External recovery and recycling of waste should comply with applicable local and/or national regulations.
2.2 Contributing scenario controlling consumer exposure for: PC1, PC3, PC8, PC9a, PC9b, PC9c, PC13, PC18, PC28, PC31, PC34, PC35, PC39		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	519 Pa
Frequency and duration of use	Frequency of use	365 days/year
Conditions and measures related to protection of consumer (e.g.	No specific risk management measure identified beyond those operational conditions stated.	

behavioural advice, personal protection and hygiene)	

3. Exposure estimation and reference to its source

Environment

ERC8d: ECETOC TRA model v2

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8d	---	Fresh water	exposure estimate	0,000245mg/L	0,0279
ERC8d	---	Fresh water sediment	exposure estimate	0,0634mg/kg dry weight (d.w.)	0,0279
ERC8d	---	Marine water	exposure estimate	0,0000232mg/L	0,0263
ERC8d	---	Marine sediment	exposure estimate	0,00598mg/kg dry weight (d.w.)	0,0264
ERC8d	---	Sewage treatment plant (STP)	exposure estimate	0,00157mg/L	0,000238
ERC8d	---	Indirect exposure to humans via the environment	exposure estimate	---	0,000708
ERC8d	---	Agricultural soil	exposure estimate	0,00386mg/kg dry weight (d.w.)	0,0373
ERC8d	---	Air	exposure estimate	0,0000855	---

Consumers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	worst-case	Consumer combined exposure	0,15mg/kg bw/day	---

ECETOC TRA consumer v3.

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in

combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

COMPANY INFORMATION DISTRIBUTOR		
name	**BRENNTAG N.V.**	**BRENNTAG Nederland B.V.**
address	Nijverheidslaan 38 8540 Deerlijk	Donker Duyvisweg 44 3316 BM Dordrecht
country	Belgium	The Netherlands
phone number	+32 (0)56 77 69 44	+31 (0)78 65 44 944
fax number	+32 (0)56 77 57 11	+31 (0)78 65 44 919
website	www.brenntag.be	www.brenntag.nl
e-mail	info@brenntag.be	info@brenntag.nl
activities	Distribution and export of chemicals and raw materials	
VAT number	BE0405317567	NL001375945B01
recall procedure available	Yes	
emergency number (24/365)	+32 (0)56 77 69 44	+31 (0)78 6544 944
QUALITY SYSTEMS		
ISO 9001	Yes	Yes
ISO 14001	Yes	Yes
ISO 22000	Yes	Yes
FSSC 22000	Yes	Yes
GMP+ -feed	Yes	Yes
OHSAS18001	-	Yes
ESAD	Yes	Yes
other	-	AEO