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

1.1 Product identifier

Trade name	:	Alphaline™ 70
REACH Registration Number	:	01-2119965149-27-0003
Substance name	:	Reaction mass of (E)-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one and 4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one

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

Use of the Substance/Mixture	:	Ingredient for fragrances

1.3 Details of the supplier of the safety data sheet

Company	:	DSM Nutritional Products Ltd. PO Box 2676 CH-4002 Basel
Telephone	:	+41618158888
E-mail address of person responsible for the SDS	:	sds.nutritionalproducts@dsm.com

1.4 Emergency telephone number

+41 848 00 11 77 (Carechem 24 International)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements	:	H412	Harmful to aquatic life with long lasting effects.
Precautionary statements	:	**Prevention:**	
		P273	Avoid release to the environment.
		Disposal:	
		P501	Dispose of contents/ container to an approved waste disposal plant.

Additional Labelling:

EUH208	Contains 6,10-dimethylundeca-3,5,9-trien-2-one. May produce an allergic reaction.

2.3 Other hazards

In case of extensive air contact (e.g. soaked rags, moistened clothes) an exothermic autooxidation (self-ignition) is possible.

SECTION 3: Composition/information on ingredients

Brief description of the product	:	Mixture of isomers

3.1 Substances

Hazardous components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one	127-41-3 204-841-6	>= 70 - < 90
(E)-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one	79-77-6 201-224-3	>= 10 - < 25
4-(2,2-dimethyl-6-methylenecyclohexyl)-3-buten-2-one	79-76-5 201-223-8	>= 5 - < 10
6,10-dimethylundeca-3,5,9-trien-2-one	141-10-6 205-457-1	>= 0.25 - < 1

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : No hazards which require special first aid measures.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No specific symptoms known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Alcohol-resistant foam
Dry chemical
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : None known.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. When the spilled material is cleaned up with an absorbant material, attention should be paid to the possibility of exothermic autooxidation (self-ignition) in the presence of air, even at room temperature: store in the absence of air (e.g. in water) and send for incineration (or dispose of in accordance with local regulations).

6.2 Environmental precautions

Environmental precautions	:	Try to prevent the material from entering drains or water courses.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Wipe up with absorbent material (e.g. cloth, fleece). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	For personal protection see section 8. Dispose of rinse water in accordance with local and national regulations. Provide sufficient air exchange and/or exhaust in work rooms.
Advice on protection against fire and explosion	:	Take necessary action to avoid static electricity discharge. Product will burn under fire conditions.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of work-day.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	To maintain product quality, do not store in heat or direct sunlight. Keep container tightly closed and dry.

7.3 Specific end use(s)

Specific use(s) : Not applicable

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one	Workers	Inhalation	Long-term systemic effects	8.22 mg/m3
	Workers	Skin contact	Long-term systemic effects	2.33 mg/kg bw/d
	Consumers	Inhalation	Long-term systemic effects	1.45 mg/m3
	Consumers	Skin contact	Long-term systemic effects	0.833 mg/kg bw/d

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

Substance name	Environmental Compartment	Value
4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one	Fresh water	0.00268 mg/l
	Marine water	0.000268 mg/l
	Water	0.0265 mg/l
	Intermittent use/release	
	Fresh water sediment	0.188 mg/kg dry weight
	Marine sediment	0.0188 mg/kg dry weight
	Sewage treatment plant	10 mg/l

8.2 Exposure controls

Personal protective equipment

Eye protection : Safety glasses with side-shields

Hand protection : Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.
Glove material: for example nitrile rubber

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

Respiratory protection : In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

In the case of vapour formation use a respirator with an approved filter.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : oily liquid

Colour	:	pale yellow - yellow
Odour	:	characteristic
Odour Threshold	:	No information available.
pH	:	No data available
Melting point/range	:	< 25 °C
Boiling point/boiling range	:	212 °C (977.7 hPa; OECD Test Guideline 103)
Flash point	:	120 °C (977.8 hPa)
Evaporation rate	:	not determined
Lower explosion limit	:	not determined
Upper explosion limit	:	not determined
Vapour pressure	:	0.933 Pa (20 °C)
Relative vapour density	:	not determined
Density	:	0.930 - 0.936 g/cm3 (20 °C)
Water solubility	:	500 mg/l (25 °C)
Solubility in other solvents	:	various organic solvents: soluble
Partition coefficient: n-octanol/water	:	log Pow 4.1 (24 °C; OECD Test Guideline 117)
Auto-ignition temperature	:	not auto-flammable
Ignition temperature	:	not determined
Thermal decomposition	:	Not relevant
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	30.38 mm2/s (20 °C)
		19.14 mm2/s (40 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	No data available

9.2 Other information

Surface tension	:	32.7 mN/m (20 °C)

SECTION 10: Stability and reactivity

10.1 Reactivity

No hazards to be specially mentioned.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

In case of extensive air contact (e.g. soaked rags, moistened clothes) an exothermic autooxidation (self-ignition) is possible.

10.4 Conditions to avoid

Heat
Exposure to air.

10.5 Incompatible materials

Strong acids and strong bases
Strong oxidizing agents

10.6 Hazardous decomposition products

Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity	:	LD50 (Rat): 4,500 mg/kg tested with an isomer mixture
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg (OECD Test Guideline 402)
Skin irritation	:	No skin irritation (Rabbit, OECD Test Guideline 404)
Eye irritation	:	No eye irritation (Rabbit) temporary redness Information refers to the main component.
Sensitisation	:	Did not cause sensitization. (human) tested with an isomer mixture
	:	Did not cause sensitization. (Guinea pig) Information refers to the main component.
Genotoxicity in vitro	:	not mutagenic (Ames test)
Genotoxicity in vivo	:	not genotoxic (Mutagenicity (micronucleus test), Mouse, Bone marrow) Information refers to the main component.
Carcinogenicity 6,10-dimethylundeca-3,5,9-trien-2-one	:	No indication for carcinogenicity known.
Reproductive toxicity 6,10-dimethylundeca-3,5,9-trien-2-one	:	NOEL: 360 mg/kg bw/d (Rat, Oral, OECD Test Guideline 415)
Teratogenicity (E)-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one	:	NOAEL: 400 mg/kg bw/d (Rat, Oral, OECD Test Guideline 414) NOAEL: 50 mg/kg bw/d (Rabbit, Oral, OECD Test Guideline 414)
6,10-dimethylundeca-3,5,9-trien-2-one	:	NOEL: 360 mg/kg bw/d (Rat, Oral, OECD Test Guideline 415)

STOT - single exposure (Acute exposure)	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.
STOT - repeated exposure	:	NOAEL (Oral, Rat) : 10 mg/kg bw/d Sub-chronic toxicity study (90-day) Information refers to the main component.
Experience with human exposure (E)-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one	:	May cause sensitisation of susceptible persons., (Cases have been reported rarely.)
Experience with human exposure: Skin contact	:	May irritate skin.
Aspiration toxicity	:	No aspiration toxicity classification

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	:	Danio rerio (zebra fish) LC50 (96 h) > 7.5 mg/l (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	:	Daphnia magna (Water flea) EC50 (48 h) 4.03 mg/l Test performed using a similar product. (OECD Test Guideline 202)
Toxicity to algae	:	Chlorella vulgaris (Fresh water algae) EC50 (72 h) 50.3 mg/l (OECD Test Guideline 201)

12.2 Persistence and degradability

Biodegradability	:	Readily biodegradable. 71 % (28 d) (OECD Test Guideline 301F)

12.3 Bioaccumulative potential

Bioaccumulation (E)-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one	:	Bioconcentration factor (BCF): 202 Method: calculated value
Partition coefficient: n-octanol/water	:	log Pow 4.1 (24 °C ; OECD Test Guideline 117)

12.4 Mobility in soil

Distribution among environmental compartments	:	No data available
Surface tension	:	32.7 mN/m (20 °C)

12.5 Results of PBT and vPvB assessment

Assessment	:	The substance does not fullfill the PBT criteria. : The substance does not fullfill the vPvB criteria.

12.6 Other adverse effects

Additional ecological information	:	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.Toxic to aquatic organisms.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Organic materials (e.g. rags, paper, wood) which are soaked with this product can heat up and catch fire in the presence of air, even at room temperature: store in the absence of air (e.g. in water) and send it for incineration (or dispose of in accordance with local regulations). Discharge into the environment must be avoided. Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose of waste into sewer. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	:	Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

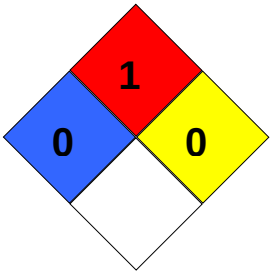
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

NFPA Classification : Health hazard: 0
Fire Hazard: 1
Reactivity Hazard: 0



15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

DNEL - Derived No-Effect Level; NFPA - National Fire Protection Association (USA); PNEC - Predicted No-Effect Concentration; STEL - Short term exposure limit; TLV-C - Ceiling Limit Value; TWA - Time Weighted Average; WEL - Workplace Exposure Limit.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific

material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GB / EN

Annex

	Title of Exposure Scenario
ES 1:	Formulation
ES 2:	Compounding of fragrance oils (large/medium sites) Compounding of fragrance oils (small sites)
ES 3:	Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (large scale), body care soap (medium and large scale)
ES 4:	Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (medium scale), body care soap (small scale)
ES 5:	Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (small scale)
ES 6:	Formulation of Cosmetics: Medium Viscosity Body Care Products (medium scale), Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (large scale)
ES 7:	Formulation of Cosmetics: Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (small scale)
ES 8:	Formulation of Cosmetics: Fine Fragrances - Cleaning with Water (medium scale), Medium Viscosity Body Care Products (small scale), Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (medium scale)
ES 9:	Formulation of Cosmetics: Fine Fragrances - Cleaning with Water (small scale)
ES 10:	Formulation of Detergents/Maintenance Products: Granular Compact (large scale) granular regular
ES 11:	Formulation of Granular Detergents/Maintenance Products-Regular & Compact (medium scale)
ES 12:	Formulation of Detergents/Maintenance Products: Granular Compact (small scale) granular regular small scale
ES 13:	Formulation of liquid Detergents/Maintenance Products: Low Viscosity (large scale)
ES 14:	Formulation of liquid Detergents/Maintenance Products: Low Viscosity (medium scale)
ES 15:	Formulation of liquid Detergents/Maintenance Products: Low Viscosity (small scale)
ES 16:	Formulation of liquid Detergents/Maintenance Products: High Viscosity (large scale)
ES 17:	Formulation of Detergents/Maintenance Products: High Viscosity Liquids (medium scale)
ES 18:	Formulation of Detergents/Maintenance Products: High Viscosity Liquids (small scale)
ES 19:	Formulation of air care products
ES 20:	Industrial use Washing and cleaning products (including solvent based products)
ES 21:	Professional use Washing and cleaning products (including solvent based products)
ES 22:	Professional use Cosmetics, personal care products
ES 23:	Professional use Polishes and wax blends
ES 24:	Consumer use of air care products
ES 25:	Washing and cleaning products (including solvent based products)
ES 26:	Polishes and wax blends
ES 27:	Biocides
ES 28:	Perfumes, fragrances
ES 29:	Cosmetics, personal care products

Abbreviations

ART = Advanced REACH Tool
ECETOC TRA = European Centre for Ecotoxicology and Toxicology Of Chemicals - Targeted Risk Assessment
ES = Exposure scenario
EUSES = European Union System for the Evaluation of Substances
PEC = Predicted exposure concentration
RCR = Risk characterisation ratio: "Level of Exposure/DNEL" or "PEC/PNEC"

ES 1: Formulation

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	10 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	2.5 %
Emission or Release Factor: Water	:	2.0 %
Emission or Release Factor: Soil	:	0.01 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). (Effectiveness (of a measure): 70 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b, PROC9, PROC15

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

(Effectiveness (of a measure): 90 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 2.4 mg/m³	<= 0.29
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b, PROC9, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.16
PROC5, PROC8a, PROC8b, PROC9, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.60

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 2: Compounding of fragrance oils (large/medium sites) Compounding of fragrance oils (small sites)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Compounding of fragrance oils (small sites)	:	40 kg
Remarks	:	daily

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Compounding of fragrance oils (large/medium sites)		
Emission or Release Factor: Air	:	2.5 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0 %
Compounding of fragrance oils (small sites)		
Emission or Release Factor: Air	:	2.5 %
Emission or Release Factor: Water	:	0.5 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC9

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC8b, PROC19

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

2.7 Contributing scenario controlling worker exposure for: PROC19, short-term

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 1 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). (Effectiveness (of a measure): 70 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC5, PROC8a,	ART	Worker (Indus-	Inhalation: long-term,	<= 0.36 mg/m³	<= 0.04

PROC9		trial)	systemic		
PROC5, PROC8a, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC8b, PROC19, long-term	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC8b, PROC19, long-term	TRA Workers 3.0		Dermal: long-term, systemic	<= 2.04 mg/kg bw/d	<= 0.88
PROC19, short-term	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	4.8 mg/m³	0.58
PROC19, short-term	TRA Workers 3.0		Dermal: long-term, systemic	0.25 mg/kg bw/d	0.11

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 3: Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (large scale), body care soap (medium and large scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.1 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d

Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.27 mg/kg bw/d	<= 0.12

PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 4: Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (medium scale), body care soap (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d

Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.27 mg/kg bw/d	<= 0.12

PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 5: Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.4 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d

Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.27 mg/kg bw/d	<= 0.12

PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 6: Formulation of Cosmetics: Medium Viscosity Body Care Products (medium scale), Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (large scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	1 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment	:	2,000 m3/d

plant effluent
Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers		Dermal: long-term,	<= 0.27 mg/kg	<= 0.12

	3.0		systemic	bw/d	
PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 7: Formulation of Cosmetics: Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	4 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d

Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.27 mg/kg bw/d	<= 0.12

PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 8: Formulation of Cosmetics: Fine Fragrances - Cleaning with Water (medium scale), Medium Viscosity Body Care Products (small scale), Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (medium scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	1.5 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment	:	2,000 m3/d

plant effluent
Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.60
			Fresh water sediment		0.11 mg/kg dry weight	0.60
			Marine water		0.0002 mg/l	0.58
			Marine sediment		0.01 mg/kg dry weight	0.58
			Sewage treatment plant		0.009 mg/l	< 0.01
			Soil		0.02 mg/kg dry weight	0.66

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers		Dermal: long-term,	<= 0.27 mg/kg	<= 0.12

	3.0		systemic	bw/d	
PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05
PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 9: Formulation of Cosmetics: Fine Fragrances - Cleaning with Water (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **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
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	1.5 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %

Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC9, PROC14

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.60
			Fresh water sediment		0.11 mg/kg dry weight	0.60
			Marine water		0.0002 mg/l	0.58
			Marine sediment		0.01 mg/kg dry weight	0.58
			Sewage treatment plant		0.009 mg/l	< 0.01
			Soil		0.02 mg/kg dry weight	0.66

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2, PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 5.6 mg/m³	<= 0.68
PROC2, PROC3	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.27 mg/kg bw/d	<= 0.12
PROC9, PROC14	ART		Inhalation: long-term, systemic	<= 0.4 mg/m³	<= 0.05

PROC9, PROC14	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC5, PROC8a, PROC8b	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 10: Formulation of Detergents/Maintenance Products: Granular Compact (large scale) granular regular

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.01 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 11: Formulation of Granular Detergents/Maintenance Products-Regular & Compact (medium scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C) 7.28 mPa.s (at 20 °C) 7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.1 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates

both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59

PROC14	ART	Worker (Industrial)	Inhalation: long-term, systemic	1.3 mg/m³	0.16
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Industrial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 12: Formulation of Detergents/Maintenance Products: Granular Compact (small scale) granular regular small scale

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 13: Formulation of liquid Detergents/Maintenance Products: Low Viscosity (large scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.01 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 14: Formulation of liquid Detergents/Maintenance Products: Low Viscosity (medium scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.1 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 15: Formulation of liquid Detergents/Maintenance Products: Low Viscosity (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 16: Formulation of liquid Detergents/Maintenance Products: High Viscosity (large scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.1 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 17: Formulation of Detergents/Maintenance Products: High Viscosity Liquids (medium scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 18: Formulation of Detergents/Maintenance Products: High Viscosity Liquids (small scale)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0.4 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics
Concentration of the Substance in : Covers the percentage of the substance in the product up to

Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Indus-	Inhalation: long-term,	1.3 mg/m³	0.16

		trial)	systemic		
PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Indus-trial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 19: Formulation of air care products

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC2:** Formulation of preparations
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	2 %
Emission or Release Factor: Water	:	2.5 %
Emission or Release Factor: Soil	:	0.01 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC15

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

2.5 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC9

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC14

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use
Frequency of use : <= 8 hours/day

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

Technical conditions and measures
Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC2	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	5.6 mg/m³	0.68
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC3, PROC15	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.3 mg/m³	<= 0.34
PROC3, PROC15	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.30
PROC4, PROC5, PROC8a, PROC8b, PROC9	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC4, PROC5, PROC8a, PROC8b, PROC9	TRA Workers 3.0		Dermal: long-term, systemic	<= 1.37 mg/kg bw/d	<= 0.59
PROC14	ART	Worker (Industrial)	Inhalation: long-term, systemic	1.3 mg/m³	0.16

PROC14	TRA Workers 3.0		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.15
PROC19	ART	Worker (Industrial)	Inhalation: long-term, systemic	0.04 mg/m³	< 0.01
PROC19	RISKOFDERM v2.1		Dermal: long-term, systemic	2.04 mg/kg bw/d	0.88

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

assumes operating temperature: <= 40 °C

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 20: Industrial use Washing and cleaning products (including solvent based products)

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **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 **PROC28:** Manual maintenance (cleaning and repair) of machinery
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C) 7.28 mPa.s (at 20 °C) 7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

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

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d

Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Temperature : 25 °C

2.3 Contributing scenario controlling worker exposure for: PROC2

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

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Temperature : 70 °C

2.4 Contributing scenario controlling worker exposure for: PROC4

Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Temperature : 70 °C

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.5 Contributing scenario controlling worker exposure for: PROC7, long-term, PROC10, PROC13

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers percentage substance in the product up to 1 %.
Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	25 °C

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.6 Contributing scenario controlling worker exposure for: PROC7, short-term, PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers percentage substance in the product up to 1 %.
Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Frequency of use	:	<= 1 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	25 °C

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.7 Contributing scenario controlling worker exposure for: PROC8b, PROC28

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Frequency of use	:	<= 1 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	25 °C

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC4	EUSES		Fresh water		0.002 mg/l	0.71
			Fresh water sediment		0.13 mg/kg dry weight	0.71
			Marine water		0.0002 mg/l	0.69
			Marine sediment		0.01 mg/kg dry weight	0.69
			Sewage treatment plant		0.01 mg/l	< 0.01
			Soil		0.03 mg/kg dry weight	0.88

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.08 mg/m³	< 0.01
PROC1	TRA Workers 3.0		Dermal: long-term, systemic	0.03 mg/kg bw/d	0.02
PROC2	ART	Worker (Industrial)	Inhalation: long-term, systemic	1.2 mg/m³	0.15
PROC2	TRA Workers 3.0		Dermal: long-term, systemic	1.37 mg/kg bw/d	0.59
PROC4	ART	Worker (Industrial)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC4	TRA Workers 3.0		Dermal: long-term, systemic	0.14 mg/kg bw/d	0.06
PROC7, long-term, PROC10, PROC13	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 1.6 mg/m³	<= 0.20
PROC7, long-term, PROC10, PROC13	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.86 mg/kg bw/d	<= 0.37
PROC7, short-term, PROC8a	ART	Worker (Industrial)	Inhalation: long-term, systemic	<= 4.0 mg/m³	<= 0.49
PROC7, short-term, PROC8a	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.86 mg/kg bw/d	<= 0.37
PROC8b, PROC28	ART, TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	<= 3.2 mg/m³	<= 0.39
PROC8b, PROC28	TRA Workers 3.0		Dermal: long-term, systemic	<= 0.55 mg/kg bw/d	<= 0.24

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 21: Professional use Washing and cleaning products (including solvent based products)

1. Scenario description

Main User Groups	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	:	**PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **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 **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	:	**ERC8a, ERC8d:** Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Activity	:	Wide dispersive indoor use of processing aids in open systems
Product characteristics		
Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)
Amount used		
Wide dispersive outdoor use of processing aids in open systems	:	0.01 kg
Remarks	:	daily
Frequency and duration of use		
Continuous exposure	:	250 days/year
Environment factors not influenced by risk management		
Flow rate of receiving surface water	:	18,000 m3/d
Other given operational conditions affecting environmental exposure		
Wide dispersive indoor use of processing aids in open systems		
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0 %
Wide dispersive outdoor use of processing aids in open systems		
Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %

Emission or Release Factor: Soil : 20 %

Technical conditions and measures / Organizational measures

Water : All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 88.02 %
Sludge Treatment : Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use

Frequency of use : <= 1 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Temperature : 25 °C

2.3 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC11, short-term, PROC13

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use

Frequency of use : <= 1 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Temperature : 25 °C

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.4 Contributing scenario controlling worker exposure for: PROC10, PROC11, long-term, PROC19

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 1 %.
Physical Form (at time of use) : Liquid mixture

Frequency and duration of use
Frequency of use : <= 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Temperature : 25 °C

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	EUSES		Fresh water		<= 0.001 mg/l	<= 0.40
			Fresh water sediment		<= 0.08 mg/kg dry weight	<= 0.40
			Marine water		<= 0.0001 mg/l	<= 0.38
			Marine sediment		<= 0.007 mg/kg dry weight	<= 0.38
			Sewage treatment plant		<= 0.004 mg/l	< 0.01
			Soil		<= 0.01 mg/kg dry weight	<= 0.28

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC4	ART	Worker (Professional)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC4	TRA Workers 3.0		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.29
PROC8a, PROC8b, PROC13	ART	Worker (Professional)	Inhalation: long-term, systemic	<= 4.0 mg/m³	<= 0.49
PROC8a, PROC8b, PROC13	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12
PROC11, short-term	ART	Worker (Professional)	Inhalation: long-term, systemic	0.02 mg/m³	< 0.01
PROC11, short-term	TRA Workers 3.0		Dermal: long-term, systemic	2.14 mg/kg bw/d	0.92
PROC10, PROC11, long-term	ART	Worker (Professional)	Inhalation: long-term, systemic	<= 0.13 mg/m³	<= 0.02
PROC10, PROC11, long-term	TRA Workers 3.0		Dermal: long-term, systemic	<= 2.14 mg/kg bw/d	<= 0.92
PROC13	TRA Workers 3.0	Worker (Professional)	Inhalation: long-term, systemic	1.6 mg/m³	0.27
PROC13	TRA Workers 3.0		Dermal: long-term, systemic	0.20 mg/kg bw/d	0.12

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

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

EUSES = EUSES version 2.1.1

ES 22: Professional use Cosmetics, personal care products

1. Scenario description

Main User Groups	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	:	**PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **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)
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Daily amount for wide dispersive uses	:	0.01 kg

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Wide dispersive indoor use of processing aids in open systems		
Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %

Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC9

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	40 °C

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.3 Contributing scenario controlling worker exposure for: PROC9

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	40 °C

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sediment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27
			Marine sediment		0.005 mg/kg dry weight	0.27
			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5, PROC8a, PROC8b	ART	Worker (Professional)	Inhalation: long-term, systemic	<= 0.36 mg/m³	<= 0.04
PROC5, PROC8a, PROC8b	TRA Workers 3.0		Dermal: long-term, systemic	1.37 mg/kg bw/d	0.59
PROC9	ART	Worker (Professional)	Inhalation: long-term, systemic	0.12 mg/m³	0.02
PROC9	TRA Workers 3.0		Dermal: long-term, systemic	1.37 mg/kg bw/d	0.59

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

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

EUSES = EUSES version 2.1.1

ES 23: Professional use Polishes and wax blends

1. Scenario description

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 **PROC10:** Roller application or brushing
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	250 days/year

Environment factors not influenced by risk management

Flow rate of receiving surface water	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Wide dispersive indoor use of processing aids in open systems

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

Technical conditions and measures / Organizational measures

Water	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

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

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	40 °C

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.3 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers percentage substance in the product up to 1 %.
Physical Form (at time of use)	:	Liquid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Temperature	:	40 °C

Technical conditions and measures

Provide adequate ventilation. (Effectiveness (of a measure): 30 %)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sediment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27
			Marine sediment		0.005 mg/kg dry weight	0.27

			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a	ART	Worker (Professional)	Inhalation: long-term, systemic	0.36 mg/m³	0.04
PROC8a	TRA Workers 3.0		Dermal: long-term, systemic	1.37 mg/kg bw/d	0.59
PROC10	ART	Worker (Professional)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC10	TRA Workers 3.0		Dermal: long-term, systemic	0.27 mg/kg bw/d	0.12

Further details on releases and control technologies are provided in IFRA guidance "REACH Exposure Scenarios for Fragrance Substance

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

EUSES = EUSES version 2.1.1

ES 24: Consumer use of air care products

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC3:** Air care products
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	0 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC3

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 10%., Air care products (non-aerosol)
Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.1%., Air care products (aerosol)
Physical Form (at time of use)	:	Liquid mixture

Amount used

Amount per event	:	2.5 g
Remarks	:	Air care products (non-aerosol)
Amount per event	:	10 g
Remarks	:	Air care products (aerosol)

Frequency and duration of use

Exposure duration per day	:	8 h
Frequency of use	:	1 Events per day
Remarks	:	Air care products (non-aerosol)
Exposure duration per day	:	0.25 h
Frequency of use	:	2 Events per day
Remarks	:	Air care products (aerosol)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		<= 0.001 mg/l	<= 0.36
			Fresh water sediment		<= 0.07 mg/kg dry weight	<= 0.36
			Marine water		<= 0.00009 mg/l	<= 0.34
			Marine sediment		<= 0.006 mg/kg dry weight	<= 0.34
			Sewage treatment plant		<= 0.002 mg/l	<= 0.01
			Soil		<= 0.007 mg/kg dry weight	<= 0.19

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC3	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	<= 0.87 mg/m³	<= 0.6
	ECETOC TRA, consumer		Dermal: long-term, systemic	<= 0.25 mg/kg bw/day	<= 0.3
	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

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

EUSES = EUSES version 2.1.1

ES 25: Washing and cleaning products (including solvent based products)

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC35:** Washing and cleaning products (including solvent based products)
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC35/1

Activity	:	Laundry and dish washing products

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.1%.
Physical Form (at time of use)	:	Liquid mixture

Frequency and duration of use

Frequency of use	:	235 days/year
Frequency of use	:	1 Events per day

2.3 Contributing scenario controlling consumer exposure for: PC35/2

Activity	:	Fabric conditioners
Product characteristics		
Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.5%.
Physical Form (at time of use)	:	Liquid mixture
Frequency and duration of use		
Frequency of use	:	210 days/year
Frequency of use	:	1 Events per day

2.4 Contributing scenario controlling consumer exposure for: PC35/3

Activity	:	Surface cleaning
Product characteristics		
Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.25%.
Physical Form (at time of use)	:	Liquid mixture
Amount used		
Amount per event	:	110 g
Frequency and duration of use		
Exposure duration per day	:	0.3 h
Frequency of use	:	105 days/year
Frequency of use	:	1 Events per day

2.5 Contributing scenario controlling consumer exposure for: PC35/4

Activity	:	Surface cleaning, Spraying
Product characteristics		
Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.05%.
Physical Form (at time of use)	:	Liquid mixture
Amount used		
Amount per event	:	30 g
Frequency and duration of use		
Exposure duration per day	:	0.2 h
Frequency of use	:	105 days/year
Frequency of use	:	1 Events per day

2.6 Contributing scenario controlling consumer exposure for: PC35/5

Activity	:	Machine dishwashing products
Product characteristics		
Concentration of the Substance in Mixture/Article	:	Covers percentage substance in the product up to 1 %.
Physical Form (at time of use)	:	Liquid mixture
Frequency and duration of use		
Frequency of use	:	261 days/year

Frequency of use : 1 Events per day

2.7 Contributing scenario controlling consumer exposure for: PC35/6

Activity : Hand dishwashing liquids

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 0.25%.

Physical Form (at time of use) : Liquid mixture

Frequency and duration of use

Frequency of use : 365 days/year

Frequency of use : 2 Events per day

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		<= 0.0009 mg/l	<= 0.33
			Fresh water sediment		<= 0.06 mg/kg dry weight	<= 0.33
			Marine water		<= 0.00008 mg/l	<= 0.31
			Marine sediment		<= 0.006 mg/kg dry weight	<= 0.31
			Sewage treatment plant		<= 0.002 mg/l	< 0.01
			Soil		<= 0.005 mg/kg dry weight	<= 0.15

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC35/1	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0 mg/m³	< 0.01
PC35/1	ECETOC TRA, consumer		Dermal: long-term, systemic	0.14 mg/kg bw/day	0.17
PC35/1	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01
PC35/2	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0 mg/m³	< 0.01
PC35/2	ECETOC TRA, consumer		Dermal: long-term, systemic	0.72 mg/kg bw/day	0.86
PC35/2	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01

PC35/3	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0.12 mg/m³	0.08
PC35/3	ECETOC TRA, consumer		Dermal: long-term, systemic	0.36 mg/kg bw/day	0.43
PC35/3	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01
PC35/4	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0.67 mg/m³	0.46
PC35/4	ECETOC TRA, consumer		Dermal: long-term, systemic	0.07 mg/kg bw/day	0.09
PC35/4	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01
PC35/5	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0 mg/m³	< 0.01
PC35/5	ECETOC TRA, consumer		Dermal: long-term, systemic	0.72 mg/kg bw/day	0.86
PC35/5	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01
PC35/6	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0 mg/m³	< 0.01
PC35/6	ECETOC TRA, consumer		Dermal: long-term, systemic	0.72 mg/kg bw/day	0.86
PC35/6	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

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

EUSES = EUSES version 2.1.1

ES 26: Polishes and wax blends

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC31:** Polishes and wax blends
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Daily amount for wide dispersive uses	:	0.01 kg

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC31

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.5%., No spraying
Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.01%., Manual spraying
Physical Form (at time of use)	:	Liquid mixture, Solid mixture

Amount used

Amount per event	:	550 g

Remarks : no spraying
Amount per event : 135 g
Remarks : Manual spraying

Frequency and duration of use

Exposure duration per day : 4 h
Frequency of use : 24 days/year
Frequency of use : 1 Events per day
Remarks : no spraying
Exposure duration per day : 1 h
Frequency of use : 8 days/year
Frequency of use : 1 Events per day
Remarks : Manual spraying

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sediment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27
			Marine sediment		0.005 mg/kg dry weight	0.27
			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC31	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	<= 0.40 mg/m³	<= 0.28
PC31	ECETOC TRA, consumer		Dermal: long-term, systemic	<= 0.36 mg/kg bw/day	<= 0.43
PC31	ECETOC TRA, consumer		Oral exposure	0 mg/kg bw/day	< 0.01

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 27: Biocides

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC8:** Biocidal products (e.g. Disinfectants, pest control)
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Daily amount for wide dispersive uses	:	0.01 kg

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC8

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 0.25%.
Physical Form (at time of use)	:	Liquid mixture

Amount used

Amount per event	:	50 g

Frequency and duration of use

Exposure duration per day : 0.25 h
Frequency of use : 365 days/year
Frequency of use : 1 Events per day

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sediment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27
			Marine sediment		0.005 mg/kg dry weight	0.27
			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC8	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0.05 mg/m³	0.04
PC8	ECETOC TRA, consumer		Dermal: long-term, systemic	0.36 mg/kg bw/day	0.43
PC8	ECETOC TRA, consumer		Oral exposure	0.04 mg/kg bw/day	0.05

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

Further details on SpERCs, scaling, releases and control technologies are provided in IFRA Guidance "REACH Exposure Scenarios for Fragrance Substances"

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

EUSES = EUSES version 2.1.1

ES 28: Perfumes, fragrances

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC28:** Perfumes, fragrances
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	AISE = International Association for Soaps, Detergents and Maintenance Products

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Daily amount for wide dispersive uses	:	0.01 kg

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

2.2 Contributing scenario controlling consumer exposure for: PC28

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers percentage substance in the product up to 1 %.
Physical Form (at time of use)	:	Liquid mixture

Amount used

Amount per event	:	50 g

Frequency and duration of use

Exposure duration per day : 0.25 h
Frequency of use : 365 days/year
Frequency of use : 1 Events per day

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sediment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27
			Marine sediment		0.005 mg/kg dry weight	0.27
			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC28	ECETOC TRA, consumer	Consumers	Inhalation: long-term, systemic	0.22 mg/m³	0.15
PC28	ECETOC TRA, consumer		Dermal: long-term, systemic	0.35 mg/kg bw/day	0.42
PC28	ECETOC TRA, consumer		Oral exposure	0.17 mg/kg bw/day	0.2

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

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

EUSES = EUSES version 2.1.1

ES 29: Cosmetics, personal care products

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC39:** Cosmetics, personal care products
Environmental Release Categories	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	Cosmetics Europe / COLIPA

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics

Viscosity, dynamic	:	7.28 mPa.s (at 20 °C)

Amount used

Daily amount for wide dispersive uses	:	0.01 kg

Frequency and duration of use

Continuous exposure	:	365 days/year

Environment factors not influenced by risk management

Flow rate	:	18,000 m3/d

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	0.0 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Effectiveness (of a measure)	:	88.02 %
Sludge Treatment	:	Can be applied on agricultural soil, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assess-ment Meth-od	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8a	EUSES		Fresh water		0.0008 mg/l	0.29
			Fresh water sedi-ment		0.05 mg/kg dry weight	0.29
			Marine water		0.00007 mg/l	0.27

			Marine sediment		0.005 mg/kg dry weight	0.27
			Sewage treatment plant		0.0006 mg/l	< 0.01
			Soil		0.002 mg/kg dry weight	0.06

For complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.

Risk to consumers' health does not need to be assessed as this is already covered by the Cosmetic Directive 76/768/EEC.

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

EUSES = EUSES version 2.1.1