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

1.1 Product identifier

Trade name	:	Pyridoxine Hydrochloride
REACH Registration Number	:	01-2120113157-67-0001
Substance name	:	3,4-Pyridinedimethanol, 5-hydroxy-6-methyl-, hydrochloride (1:1)
CAS-No.	:	58-56-0

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

Use of the Substance/Mixture	:	For the fortification of foods, Additive for animal nutrition to be used in feed, Ingredient for pharmaceutical products, Ingredient for personal care products

1.3 Details of the supplier of the safety data sheet

Company	:	DSM Nutritional Products (UK) Ltd. Heanor Gate αGB061EI0017 Delves Road GB-DE75 7SG Heanor
Telephone	:	+441773536500
Telefax	:	+441773536600
E-mail address of person responsible for the SDS	:	sds.nutritionalproducts@dsm.com

1.4 Emergency telephone number

+44 1865 407333

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Serious eye damage, Category 1 H318: Causes serious eye damage.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements : H318 Causes serious eye damage.

Precautionary statements : **Prevention:**
P280 Wear eye protection/ face protection.
Response:
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

2.3 Other hazards

Risk of dust explosion.

SECTION 3: Composition/information on ingredients

Synonyms : vitamin B6 hydrochloride

Brief description of the product : Substance

Molecular formula : C8-H11-N-O3 .Cl-H

3.1 Substances

Hazardous components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
pyridoxine hydrochloride	58-56-0 200-386-2	>= 90 - <= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.

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 : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Continue rinsing eyes during transport to hospital.
Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.
Do NOT induce vomiting.

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 : Water

Foam

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	Formation of corrosive gases by combustion.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.
Further information	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Consider dust explosion hazard.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Evacuate personnel to safe areas. Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Avoid breathing dust.

6.2 Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Pick up and arrange disposal without creating dust.

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	:	Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
Advice on protection against fire and explosion	:	Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. Take precautionary measures against static discharges.
Hygiene measures	:	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

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

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
pyridoxine hydrochloride	58-56-0	TWA	2 mg/m3	DSM Internal Limit

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

Substance name	End Use	Exposure routes	Potential health effects	Value
vitamin B6 hydrochloride	Industrial use	Inhalation	Long-term systemic effects	1.9 mg/m3
		Dermal	Long-term systemic effects	1.05 mg/kg bw/d
	Consumer use	Inhalation	Long-term systemic effects	2.8 mg/m3
		Dermal	Long-term systemic effects	0.35 mg/kg bw/d
		Oral	Long-term systemic effects	0.35 mg/kg bw/d

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

Substance name	Environmental Compartment	Value
vitamin B6 hydrochloride	Fresh water	0.072 mg/l
	Fresh water sediment	0.27 mg/kg
	Marine water	0.007 mg/l
	Marine sediment	0.027 mg/kg
	Sewage treatment plant	100 mg/l
	Soil	0.001 mg/kg dry weight (d.w.)

8.2 Exposure controls

Personal protective equipment

Eye protection : Safety glasses with side-shields
Wear face-shield and protective suit for abnormal processing problems.

Hand protection

: Glove material: for example nitrile rubber
Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

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

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	powder
Colour	:	white
Odour	:	odourless
Odour Threshold	:	No information available.
pH	:	2.4 - 3.0 (5%) (as aqueous solution)
Melting point/range	:	ca. 205 °C with decomposition
	:	Decomposes below the boiling point.
Flash point	:	Not applicable
Flammability (solid, gas)	:	May form combustible dust concentrations in air.
		not highly flammable (Method: Regulation (EC) No. 440/2008, Annex, A.10)
Vapour pressure	:	< 0.001 hPa (25 °C; calculated (citation from literature))
Relative vapour density	:	Not applicable
Density	:	1.44 g/cm3 (20 °C; OECD Test Guideline 109)
Water solubility	:	ca. 200 g/l (20 °C)
Solubility in other solvents	:	Ethanol: slightly soluble
		Diethylether: insoluble
		Chloroform: insoluble
		Propylene glycol: soluble
Partition coefficient: n-octanol/water	:	log Pow -4.32 (calculated (citation from literature))
Auto-ignition temperature	:	No self ignition observed in the Grewer oven at temperatures below melting point.
Thermal decomposition	:	Decomposes on heating. Potential for exothermic hazard
Explosive properties	:	Not explosive
Oxidizing properties	:	No data available

9.2 Other information

Combustibility index for deposited dust	:	2 (21 °C)
	:	2 (100 °C)
Dust explosion class	:	St(H)1 (Milled sample, Median value of the tested sample 0.033 mm, Loss on drying 0.4 %; The value was determined in the modified Hartmann tube.)
Minimum ignition energy	:	10 - 30 mJ (Milled sample, Median value of the tested sample 0.033 mm, Loss on drying 0.4 %, EN 13821) The Minimum ignition energy (MIE) of a dust/air mix depends on the particle size the water content and the temperature of the dust. The finer and the dryer the dust the lower the MIE.
	:	General remark: The indicated dust explosion characteristics are only valid for this product and are sensitive to the sample's

parameters.

Powder volume resistivity	:	ca. 2E+12 Ohmm (Test performed using a similar product., Median value of the tested sample 0.189 mm, Loss on drying 0.3 %) The material can accumulate static charge and can therefore cause electrical ignition.
Minimum ignition temperature of a dust/air mix	:	510 °C (Median value of the tested sample 0.050 mm) determined in the BAM oven
Molecular weight	:	205.64 g/mol

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

Dust may form explosive mixture in air.

10.4 Conditions to avoid

Heat

10.5 Incompatible materials

Strong acids and strong bases
Strong oxidizing agents

10.6 Hazardous decomposition products

Hydrogen chloride
Nitrogen oxides (NOx)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity	:	LD50 (Rat): > 6,600 mg/kg
	:	LD50 (Mouse): > 6,000 mg/kg
Skin irritation	:	No skin irritation (In vitro study, OECD Test Guideline 439)
	:	May cause skin irritation in susceptible persons.
Eye irritation	:	Risk of serious damage to eyes. (Bovine cornea, OECD Test Guideline 437, 4 h)
Sensitisation	:	Did not cause sensitisation on laboratory animals. (Guinea pig, Maximisation Test, OECD Test Guideline 406)
	:	no photoallergenic skin reaction (Guinea pig, CTFA Test Guideline)

Genotoxicity in vitro	:	not mutagenic (Ames test, OECD Test Guideline 471)
	:	not genotoxic (Micronucleus test, OECD Test Guideline 487)
Carcinogenicity	:	No indication for carcinogenicity known.
Reproductive toxicity	:	Reduction of fertility LOAEL: 125 mg/kg body weight (Rat, male)
Teratogenicity	:	Did not show teratogenic effects in animal experiments. (Rat, Oral)
STOT - single exposure (Acute exposure)	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.
STOT - repeated exposure	:	This information is not available.
Experience with human exposure	:	RDA (Recommended Daily Allowance) ca. 2.0 mg
Experience with human exposure: Skin contact	:	May be slightly irritating, especially on damp skin.
Experience with human exposure: Ingestion	:	Chronic overdose may provoke the following symptoms:
	:	Reversible peripheral sensory neuropathy
Aspiration toxicity	:	No aspiration toxicity classification

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	:	Oncorhynchus mykiss (rainbow trout) LC50 (96 h) > 100 mg/l (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	:	Daphnia magna (Water flea) EC50 (48 h) > 100 mg/l (nominal concentration) (OECD Test Guideline 202)
Toxicity to algae	:	Desmodesmus subspicatus (green algae) EbC50 (72 h) 5.3 mg/l (OECD Test Guideline 201)
	:	EbC0 (72 h) 1.2 mg/l

12.2 Persistence and degradability

Biodegradability	:	Readily biodegradable.

94 % (28 d)
(OECD Test Guideline 301E)

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water	:	log Pow -4.32 (calculated (citation from literature))

12.4 Mobility in soil

Distribution among environmental compartments	:	No data available

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	:	Toxic to aquatic organisms.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	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

Remarks	:	Not classified as dangerous in the meaning of transport regulations.

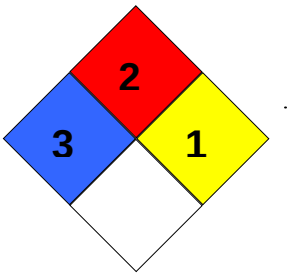
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

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: 3
Fire Hazard: 2
Reactivity Hazard: 1



15.2 Chemical safety assessment

This information is not available.

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

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 of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (large scale), body care soap (medium and large scale)
ES 2:	Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (medium scale), body care soap (small scale)
ES 3:	Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (small scale)
ES 4:	Formulation of cosmetic products (fine fragrances)
ES 5:	Formulation or re-packing - Formulation of High Viscosity Body Care Products (medium scale)
ES 6:	Formulation of Cosmetics: High Viscosity Body Care Products (small scale)
ES 7:	- ES 9: Formulation of Cosmetics: Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (small scale) Formulation of Non-liquid Creams medium scale Formulation of Non-liquid Creams (large scale)
ES 10:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) Large scale
ES 11:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) medium scale
ES 12:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) small scale
ES 13:	- ES 15: Formulation or re-packing - Formulation of solid cosmetic and home care products small scale / medium scale and Large scale
ES 16:	Mixing and loading of plant protection products into delivery equipment
ES 17:	Spray application of plant protection products containing co-formulants Professional use
ES 18:	Professional use Biocides Granule application / Seed treatment
ES 19:	Biocides Spraying
ES 20:	Biocides Granule application / Seed treatment
ES 21:	For use in fermentation Industrial use
ES 21a:	For use in fermentation Industrial use
ES 21b:	For use in fermentation Industrial use
ES 22:	Use in ‘Down the Drain’ Products - hair and skin care products
ES 23:	Used for personal care products With potential for aerosol generation
ES 24:	Use of aerosol products for hair and skin care (propellants)

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 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of cosmetic products (fine fragrances), Formulation of Cosmetics: low viscosity liquids (Shampoo, hair conditioner, shower gel, foam bath) (large scale), body care soap (medium and large scale)

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	0.1 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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: PROC14, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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	Exposure Assess-	Specific	Compartment	Value	Level of Exposure	RCR

Scenario	ment Method	conditions			(PEC)	
ERC2	EUSES		Fresh water		0.003 mg/l	0.04
			Fresh water sediment		0.01 mg/kg dry weight	0.04
			Marine water		0.0003 mg/l	0.04
			Marine sediment		0.001 mg/kg dry weight	0.04
			Soil		0.0002 mg/kg dry weight	0.02
			Sewage treatment plant		0.025 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 2: 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

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

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	0.2 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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: PROC14, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 Meth-	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR

	od					
ERC2	EUSES		Fresh water		0.005 mg/l	0.07
			Fresh water sediment		0.02 mg/kg dry weight	0.07
			Marine water		0.0005 mg/l	0.07
			Marine sediment		0.002 mg/kg dry weight	0.07
			Soil		0.0002 mg/kg dry weight	0.02
			Sewage treatment plant		0.05 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 3: 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

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

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	0.4 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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: PROC14, 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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

ERC2	EUSES		Fresh water		0.01 mg/l	0.14
			Fresh water sediment		0.04 mg/kg dry weight	0.14
			Marine water		0.001 mg/l	0.14
			Marine sediment		0.004 mg/kg dry weight	0.14
			Soil		0.0003 mg/kg dry weight	0.03
			Sewage treatment plant		0.101 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 4: Formulation of cosmetic products (fine fragrances)

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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of cosmetic products (fine fragrances), 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), Formulation of Cosmetics: Fine Fragrances - Cleaning with Water (small scale)

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	1.5 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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: PROC14, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC2	EUSES		Fresh water		0.04 mg/l	0.53
			Fresh water sediment		0.14 mg/kg dry weight	0.52
			Marine water		0.004 mg/l	0.53
			Marine sediment		0.014 mg/kg dry weight	0.53
			Soil		0.0009 mg/kg dry weight	0.08
			Sewage treatment plant		0.38 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 5: Formulation or re-packing - Formulation of High Viscosity Body Care Products (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

2.1 Contributing scenario controlling environmental exposure for: ERC2

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

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	1 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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: PROC14, 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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

ERC2	EUSES		Fresh water		0.025 mg/l	0.354
			Fresh water sediment		0.094 mg/kg dry weight	0.35
			Marine water		0.003 mg/l	0.35
			Marine sediment		0.009 mg/kg dry weight	0.35
			Soil		0.0006 mg/kg dry weight	0.059
			Sewage treatment plant		0.253 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 6: Formulation of Cosmetics: High Viscosity Body Care Products (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

2.1 Contributing scenario controlling environmental exposure for: ERC2

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

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	2 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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: PROC14, 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

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

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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
ERC2	EUSES		Fresh water		0.051 mg/l	0.71
			Fresh water sedi-		0.188 mg/kg dry	0.697

			ment		weight	
			Marine water		0.005 mg/l	0.71
			Marine sediment		0.019 mg/kg dry weight	0.71
			Soil		0.001 mg/kg dry weight	0.11
			Sewage treatment plant		0.51 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 7: - ES 9: Formulation of Cosmetics: Non-liquid Creams (skin care, body care, mascara, solar oil, make-up foundation) (small scale) Formulation of Non-liquid Creams medium scale Formulation of Non-liquid Creams (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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of Non-liquid Creams, IFRA SG-8: ERC 2 default - all scales

Amount used

Daily amount per site	:	<= 0.2 t
Annual amount per site	:	<= 50.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	4 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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: PROC14, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 Meth-	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR

	od					
ERC2	EUSES		Fresh water		<= 0.051 mg/l	<= 0.71
			Fresh water sediment		<= 0.188 mg/kg dry weight	<= 0.70
			Marine water		<= 0.006 mg/l	<= 0.71
			Marine sediment		<= 0.019 mg/kg dry weight	<= 0.71
			Soil		<= 0.001 mg/kg dry weight	<= 0.11
			Sewage treatment plant		<= 0.51 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.685 mg/kg bw/d	0.653
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	<= 0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 10: Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products), -, Large scale

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regula-

tion.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 Contributing scenario controlling worker exposure for: 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Technical conditions and measures

Ensure adequate ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.5 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC2	EUSES		Fresh water		0.0002 mg/l	< 0.01
			Fresh water sediment		0.0007 mg/kg dry weight	< 0.01
			Marine water		0.00002 mg/l	< 0.01
			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.01
			Sewage treatment plant		0 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC1, PROC2	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.26
PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC3	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 11: Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products), -, medium scale

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regula-

tion.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 Contributing scenario controlling worker exposure for: 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Technical conditions and measures

Ensure adequate ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.5 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC2	EUSES		Fresh water		0.0002 mg/l	< 0.01
			Fresh water sediment		0.0007 mg/kg dry weight	< 0.01
			Marine water		0.00002 mg/l	< 0.01
			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.01
			Sewage treatment plant		0 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC1, PROC2	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.26
PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC3	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 12: Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products) 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation of cosmetic products involving cleaning with Organic Solvents (Varnish / Removers, Decorative Cosmetics, Spray, Lacquer, Fine Fragrance, Solar oil, solid products), -, Small scale

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regula-

tion.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 Contributing scenario controlling worker exposure for: 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Technical conditions and measures

Ensure adequate ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.5 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC2	EUSES		Fresh water		0.0002 mg/l	< 0.01
			Fresh water sediment		0.0007 mg/kg dry weight	< 0.01
			Marine water		0.00002 mg/l	< 0.01
			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.01
			Sewage treatment plant		0 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.01 mg/m³	< 0.01
PROC1, PROC2	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.26
PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.053
PROC3	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 13: - ES 15: Formulation or re-packing - Formulation of solid cosmetic and home care products small scale / medium scale 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

2.1 Contributing scenario controlling environmental exposure for: ERC2

Activity	:	Formulation, solid, Used in personal care products

Amount used

Daily amount per site	:	<= 0.4 t
Annual amount per site	:	<= 100.0 t

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	:	0.0 %
Emission or Release Factor: Water	:	0.2 %
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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC1, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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

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

2.3 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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): 90 %)

2.4 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)	:	Solid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Human factors not influenced by risk management
Dermal exposure : Hand

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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: PROC14, 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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
ERC2	EUSES		Fresh water		<= 0.005 mg/l	<= 0.07
			Fresh water sediment		<= 0.019 mg/kg dry weight	<= 0.07
			Marine water		<= 0.005 mg/l	<= 0.07
			Marine sediment		<= 0.002 mg/kg dry weight	<= 0.07
			Soil		<= 0.0002 mg/kg dry weight	<= 0.02
			Sewage treatment plant		<= 0.051 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1, PROC2, PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	<= 0.05
PROC1, PROC2, PROC3	ECETOC TRA		Dermal: long-term, systemic	<= 0.274 mg/kg bw/d	<= 0.261
PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC9	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC9	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65
PROC14, PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC14, PROC15	ECETOC TRA		Dermal: long-term, systemic	0.686 mg/kg bw/d	<= 0.65

Releases based on SpERC (Specific Environmental Release Categories):

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

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 2.1.2

ES 16: Mixing and loading of plant protection products into delivery equipment

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**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
Environmental Release Categories	:	**ERC2, ERC3:** Formulation of preparations, Formulation in materials

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC3

Activity	:	Formulation, solid

Amount used

Daily amount per site	:	<= 0.5 t
Annual amount per site	:	<= 10.0 t

Environment factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure

Formulation of preparations		
Emission or Release Factor: Air	:	2.5 %
Emission or Release Factor: Water	:	2 %
Emission or Release Factor: Soil	:	0.01 %
Formulation in materials		
Emission or Release Factor: Air	:	30 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	0.1 %

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)	:	87.34 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regula-

tion.

2.2 Contributing scenario controlling worker exposure for: 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use

Technical conditions and measures

Handle substance within a closed system. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

2.3 Contributing scenario controlling worker exposure for: PROC4, 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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Ventilation rate per hour	:	1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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 %)

2.4 Contributing scenario controlling worker exposure for: PROC9, PROC14

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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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): 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) : Solid substance

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

Human factors not influenced by risk management
Dermal exposure : Hand

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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		0.063 mg/l	0.88
			Fresh water sediment		0.235 mg/kg dry weight	0.87
			Marine water		0.006 mg/l	0.88
			Marine sediment		0.024 mg/kg dry weight	0.88
			Soil		0.001 mg/kg dry weight	0.13
			Sewage treatment plant		0.633 mg/l	< 0.01

ERC3	EUSES		Fresh water		0.013 mg/l	0.18
			Fresh water sediment		0.048 mg/kg dry weight	0.18
			Marine water		0.001 mg/l	0.18
			Marine sediment		0.024 mg/kg dry weight	0.18
			Soil		0.0008 mg/kg dry weight	0.07
			Sewage treatment plant		0.633 mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC3	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC3	ECETOC TRA		Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC4, PROC5, PROC8a, PROC8b	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	<= 0.5 mg/m³	<= 0.263
PROC4, PROC5, PROC8a, PROC8b	ECETOC TRA		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.65
PROC9, PROC14	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC9, PROC14	ECETOC TRA		Dermal: long-term, systemic	<= 0.69 mg/kg bw/d	<= 0.65
PROC15	ECETOC TRA	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC15	ECETOC TRA		Dermal: long-term, systemic	0.34 mg/kg bw/d	0.33

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 2.1.2

ES 17: Spray application of plant protection products containing co-formulants Professional use

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 **PROC11:** Non industrial spraying
Environmental Release Categories	:	**ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Activity	:	Spray application of plant protection products containing co-formulants, Mixing and loading of plant protection products into delivery equipment

Amount used

Daily amount per site	:	<= 0.01 kg
Annual amount per site	:	<= 0.002 t

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	:	49.8 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	50 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Effectiveness (of a measure)	:	0 %
Remarks	:	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC11

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Human factors not influenced by risk management

Dermal exposure	:	Hand

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Ensure operatives are trained to minimise exposures.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	ECPA OWB 3.3		Fresh water		0.003 mg/l	0.04
			Fresh water sediment		0.0006 mg/kg dry weight	< 0.01
			Marine water		0.0003 mg/l	0.04
			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.001 mg/kg dry weight	0.90
			Sewage treatment plant			

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a, PROC11	ECPA OWB 3.3	Worker (Professional)	Inhalation: long-term, systemic	<= 0.006 mg/m³	< 0.01
PROC8a, PROC11	ECPA OWB 3.3		Dermal: long-term, systemic	<= 0.78 mg/kg bw/d	<= 0.75

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"

No intentional release of the substance to waste water.

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

EUSES = EUSES version 2.1.2

ES 18: Professional use Biocides Granule application / Seed treatment

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 **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Environmental Release Categories	:	**ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Activity	:	Preparation of material for application (powder products) - transfer of material from one container to another, Loading of application equipment - batch, outdoor, Preparation of material for application - batch and outdoor, Granule application / Seed treatment

Amount used

Daily amount for wide dispersive uses	:	<= 0.01 kg
Annual amount for wide disperse uses	:	<= 0.002 t

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 %
Emission or Release Factor: Soil	:	100 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Effectiveness (of a measure)	:	0 %
Remarks	:	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling worker exposure for: 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)	:	Solid substance

Frequency and duration of use

Frequency of use : <= 8 hours/day

Human factors not influenced by risk management
Dermal exposure : Hand

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Ensure operatives are trained to minimise exposures.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	ECPA OWB 3.3		Fresh water		0.002 mg/l	0.03
			Fresh water sediment		0.0006 mg/kg dry weight	< 0.01
			Marine water		0.0002 mg/l	0.025
			Marine sediment		0.00005 mg/kg dry weight	< 0.01
			Soil		0.001 mg/kg dry weight	0.91
			Sewage treatment plant			

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a, PROC8b	ECPA OWB 3.3	Worker (Professional)	Inhalation: long-term, systemic	<= 0.37 mg/m³	<= 0.20
PROC8a, PROC8b	ECPA OWB 3.3		Dermal: long-term, systemic	<= 0.92 mg/kg bw/d	<= 0.88

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"

No intentional release of the substance to waste water.

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

EUSES = EUSES version 2.1.2

ES 19: Biocides Spraying

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC27:** Plant protection products
Environmental Release Categories	:	**ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Activity	:	Loading of application equipment - batch, outdoor, Preparation of material for application - batch and outdoor, Spraying

Amount used

Daily amount for wide dispersive uses	:	<= 0.01 kg
Annual amount supplied into the consumer use(s)	:	<= 0.002 t

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	:	49.8 %
Emission or Release Factor: Water	:	0.2 %
Emission or Release Factor: Soil	:	50 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Effectiveness (of a measure)	:	0 %
Remarks	:	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling consumer exposure for: PC27

Activity	:	Loading of application equipment - batch, outdoor, Preparation of material for application - batch and outdoor, Spraying

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	ECPA OWB 3.3		Fresh water		0.003 mg/l	0.04
			Fresh water sediment		0.0006 mg/kg dry weight	< 0.01
			Marine water		0.0003 mg/l	0.04

			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.001 mg/kg dry weight	0.91

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC27	ECPA OWB 3.3	Consumers	Inhalation: long-term, systemic	<= 0.001 mg/m³	< 0.01
PC27		Consumers	Dermal: long-term, systemic	<= 0.219 mg/kg bw/day	<= 0.626

No intentional release of the substance to waste water.

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 2.1.2

ES 20: Biocides Granule application / Seed treatment

1. Scenario description

Main User Groups	:	**SU 21:** Consumer uses: Private households (= general public = consumers)
Chemical product category	:	**PC27:** Plant protection products
Environmental Release Categories	:	**ERC8d:** Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Activity	:	Delivery and dispersion of plant protection products

Product characteristics

Amount used

Daily amount for wide dispersive uses	:	5.5 g
Annual amount supplied into the consumer use(s)	:	2 kg

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Effectiveness (of a measure)	:	0 %
Remarks	:	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling consumer exposure for: PC27

Activity	:	Delivery and dispersion of plant protection products

Product characteristics

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

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure (PEC)	RCR
ERC8d	ECPA OWB		Fresh water		0.002 mg/l	0.03

	3.3					
			Fresh water sediment		0.0006 mg/kg dry weight	< 0.01
			Marine water		0.0002 mg/l	0.03
			Marine sediment		0.00005 mg/kg dry weight	< 0.01
			Soil		0.01 mg/kg dry weight	0.91

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PC27	ECPA OWB 3.3	Consumers	Inhalation: long-term, systemic	< 0.01 mg/m³	< 0.01
PC27		Consumers	Dermal: long-term, systemic	0.315 mg/kg bw/d	0.9

No intentional release of the substance to waste water.

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 2.1.2

ES 21: For use in fermentation Industrial use

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises
Environmental Release Categories	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

Activity	:	Processing aid

Product characteristics

Amount used

Daily amount for wide dispersive uses	:	<= 0.026 t
Annual amount supplied into the consumer use(s)	:	<= 9 t

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	:	40 %
Emission or Release Factor: Soil	:	5 %

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)	:	87.34 %
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 contents/container in accordance with local regulation.

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC4

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC4	EUSES		Fresh water		0.066 mg/l	0.92
			Fresh water sediment		0.245 mg/kg dry weight	0.91
			Marine water		0.007 mg/l	0.92
			Marine sediment		0.024 mg/kg dry weight	0.92
			Sewage treatment plant		0.66 mg/l	< 0.01
			Soil		0.0015 mg/kg dry weight	0.14

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC3			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC4	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.5 mg/m³	0.26
PROC4			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65

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

Releases based on SpERC (Specific Environmental Release Categories):

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 2.1.2

ES 21a: For use in fermentation Industrial use

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises
Environmental Release Categories	:	**ERC6a:** Industrial use resulting in manufacture of another substance (use of intermediates)

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Activity	:	Processing aid

Product characteristics

Amount used

Daily amount for wide dispersive uses	:	<= 0.026 t
Annual amount supplied into the consumer use(s)	:	<= 9 t

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	:	5 %
Emission or Release Factor: Water	:	2 %
Emission or Release Factor: Soil	:	0.1 %

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)	:	87.34 %
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 contents/container in accordance with local regulation.

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC4

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure

Integrated safety management systems

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
ERC6a	EUSES		Fresh water		0.003 mg/l	0.05
			Fresh water sediment		0.013 mg/kg dry weight	0.05
			Marine water		0.0003 mg/l	0.05
			Marine sediment		0.001 mg/kg dry weight	0.05
			Sewage treatment plant		0.033 mg/l	< 0.01
			Soil		0.0003 mg/kg dry weight	0.02

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC3			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC4	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.5 mg/m³	0.26
PROC4			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65

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 2.1.2

ES 21b: For use in fermentation Industrial use

1. Scenario description

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	:	**PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises
Environmental Release Categories	:	**ERC6b:** Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC6b

Activity	:	Processing aid

Product characteristics

Amount used

Daily amount for wide dispersive uses	:	<= 0.026 t
Annual amount supplied into the consumer use(s)	:	<= 9 t

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	:	0.1 %
Emission or Release Factor: Water	:	5 %
Emission or Release Factor: Soil	:	0.025 %

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)	:	87.34 %
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 contents/container in accordance with local regulation.

2.4 Contributing scenario controlling worker exposure for: PROC3, PROC4

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)	:	Solid substance

Frequency and duration of use

Frequency of use	:	<= 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 1 - 3

Organisational measures to prevent /limit releases, dispersion and exposure
Integrated safety management systems

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
ERC6b	EUSES		Fresh water		0.008 mg/l	0.12
			Fresh water sediment		0.03 mg/kg dry weight	0.12
			Marine water		0.0008 mg/l	0.12
			Marine sediment		0.003 mg/kg dry weight	0.12
			Sewage treatment plant		0.08 mg/l	< 0.01
			Soil		0.0003 mg/kg dry weight	0.03

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC3	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.1 mg/m³	0.05
PROC3			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.66
PROC4	TRA Workers 3.0	Worker (Industrial)	Inhalation: long-term, systemic	0.5 mg/m³	0.26
PROC4			Dermal: long-term, systemic	0.69 mg/kg bw/d	0.65

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 2.1.2

ES 22: Use in 'Down the Drain' Products - hair and skin 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

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Activity : Private use of cosmetics and personal care products, Use in 'Down the Drain' Products - hair and skin care products

Amount used

Daily amount for wide dispersive uses : <= 0.03 kg

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Effectiveness (of a measure) : 0 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling consumer exposure for: PC39

Activity : Private use of cosmetics and personal care products, Use in 'Down the Drain' Products - hair and skin care products

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		0.0004 mg/l	< 0.01
			Fresh water sediment		0.001 mg/kg dry weight	< 0.01
			Marine water		0.00003 mg/l	< 0.01
			Marine sediment		0.0001 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.012

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

Releases based on SpERC (Specific Environmental Release Categories):

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 2.1.2

ES 23: Used for personal care products With potential for aerosol generation

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

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Activity : Used in personal care products, With potential for aerosol generation

Amount used

Daily amount for wide dispersive uses : <= 0.03 kg

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Effectiveness (of a measure) : 0 %

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling consumer exposure for: PC39

Activity : Used in personal care products, With potential for aerosol generation

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		0.0004 mg/l	< 0.01
			Fresh water sediment		0.001 mg/kg dry weight	< 0.01
			Marine water		0.00003 mg/l	< 0.01
			Marine sediment		0.0001 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.012

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

Releases based on SpERC (Specific Environmental Release Categories):

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 2.1.2

ES 24: Use of aerosol products for hair and skin care (propellants)

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

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Activity	:	Consumer use of cosmetics

Amount used

Daily amount for wide dispersive uses	:	<= 0.03 kg

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 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Remarks	:	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of contents/container in accordance with local regulation.

2.2 Contributing scenario controlling consumer exposure for: PC39

Activity	:	Consumer use of cosmetics

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		0.0002 mg/l	< 0.01
			Fresh water sediment		0.0007 mg/kg dry weight	< 0.01
			Marine water		0.00002 mg/l	< 0.01
			Marine sediment		0.00006 mg/kg dry weight	< 0.01
			Soil		0.0001 mg/kg dry weight	0.011

No intentional release of the substance to waste water.

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

Releases based on SpERC (Specific Environmental Release Categories):

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 2.1.2