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

1.1 Product identifier

Sales No.	:	6378003 KEPHALIS
Substance name	:	4-(1-ETHOXYVINYL)-3,3,5,5-TETRAMETHYL-CYCLOHEXAN-1-ONE (MAIN COMPONENT)
Identifier		
CAS-No.	:	36306-87-3
EC-No.	:	252-961-2
Formula	:	C14-H24-O2
REACH Registration Number	:	01-2120224905-56

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

Intended Use Fragrances	:	Perfumery ingredient

1.3 Details of the supplier of the safety data sheet

Company	:	Givaudan Suisse SA Chemin de la Parfumerie 5 CH-1214 VERNIER
Telephone	:	+41227809111
Telefax	:	+41227809150
E-mail address Responsible/issuing person	:	global.sds_info@givaudan.com
Legal Entity	:	Givaudan France SAS 55 Voie des Bans F-95102 ARGENTEUIL

1.4 Emergency telephone number

Givaudan 24/7 call	:	+33172110003

Please refer to section 16 for a full list of emergency phone numbers, from Givaudan's 24/7 provider.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Long-term (chronic) aquatic hazard,	H411: Toxic to aquatic life with long lasting effects.

Category 2

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word	:	Warning
Hazard statements	:	H315 Causes skin irritation. H411 Toxic to aquatic life with long lasting effects.
Precautionary statements	:	**Prevention:** P264 Wash skin thoroughly after handling. P273 Avoid release to the environment. P280 Wear protective gloves. **Response:** P332 + P313 If skin irritation occurs: Get medical advice/ attention. P391 Collect spillage. **Disposal:** P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

Hazards not Otherwise Classified. : None

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	CAS-No. EC-No. REACH Registration Number	Concentration [Percent by weight]	M-Factor, SCL, ATE
4-(1-Ethoxyvinyl)-3,3,5,5-tetramethyl-cyclohexan-1-one (main component)	36306-87-3 252-961-2 01-2120224905-56	>= 90 - <= 100	Acute toxicity estimate Acute dermal toxicity:> 5 000,00 mg/kg

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Do not leave the victim unattended.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If on skin, rinse well with water.
If on clothes, remove clothes.
Immediately seek medical attention if chemical entered ear canal.
If skin irritation persists, call a physician.

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

If swallowed : Immediately consult Poison Control Center or physician.
Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	no data available
Risks	:	Causes skin irritation.

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	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	:	High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.

5.3 Advice for firefighters

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Keep people away from and upwind of spill/leak. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. Material can create slippery conditions. Use personal protective equipment.

6.2 Environmental precautions

Environmental precautions	:	Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.

Administrative information:
Report Information: SDS_FR/EN/GHS_SDS_EU_CNTRY/44
Sales & Distribution Information: VE01/FR/CH11/01
Shipping Order Information: 31 505 077/27 055 674

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	:	Clean contaminated floors and objects thoroughly while observing environmental regulations. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

Not applicable

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Do not breathe vapours/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Temperature class	:	no data available
Fire-fighting class	:	no data available
Dust explosion class	:	no data available

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.
Further information on storage conditions	:	Store Ambient 10-30℃ (50-85℉) Dry, well ventilated, preferably full, hermetically sealed
Advice on common storage	:	Protect against light.
Storage class (TRGS 510)	:	10 Combustible liquids
Other data	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Please refer to attached exposure scenarios.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

DNEL : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 6,84 mg/m3

DNEL : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute systemic effects
Value: 6,84 mg/m3

DNEL : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term local effects
Value: 17,1 mg/m3

DNEL : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute local effects
Value: 17,1 mg/m3

DNEL : End Use: Workers
Exposure routes: Dermal
Potential health effects: Long-term systemic effects
Value: 1,94 mg/kg bw/day

DNEL : End Use: Workers
Exposure routes: Dermal
Potential health effects: Acute systemic effects
Value: 1,94 mg/kg bw/day

DNEL : End Use: Workers
Exposure routes: Dermal
Potential health effects: Long-term local effects
Value: 4,85 mg/cm2

DNEL : End Use: Workers
Exposure routes: Dermal
Potential health effects: Acute local effects
Value: 4,85 mg/cm2

DNEL : End Use: Consumer use
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 1,69 mg/m3

DNEL : End Use: Consumer use
Exposure routes: Inhalation

Potential health effects: Acute systemic effects
Value: 1,69 mg/m3

DNEL : End Use: Consumer use
Exposure routes: Inhalation
Potential health effects: Long-term local effects
Value: 4,22 mg/m3

DNEL : End Use: Consumer use
Exposure routes: Inhalation
Potential health effects: Acute local effects
Value: 4,22 mg/m3

DNEL : End Use: Consumer use
Exposure routes: Dermal
Potential health effects: Long-term systemic effects
Value: 0,97 mg/kg bw/day

DNEL : End Use: Consumer use
Exposure routes: Dermal
Potential health effects: Acute systemic effects
not required

DNEL : End Use: Consumer use
Exposure routes: Dermal
Potential health effects: Long-term local effects
Value: 2,43 mg/cm2

DNEL : End Use: Consumer use
Exposure routes: Dermal
Potential health effects: Acute local effects
Value: 2,43 mg/cm2

DNEL : End Use: Consumer use
Exposure routes: Oral
Potential health effects: Long-term systemic effects
Value: 0,97 mg/kg bw/day

PNEC : Fresh water
Value: 0,0084 mg/l

PNEC : Fresh water sediment
Value: 2,871 mg/kg dry weight (d.w.)

PNEC : Marine water
Value: 0,0084 mg/l

PNEC : Marine sediment
Value: 0,287 mg/kg dry weight (d.w.)

PNEC : Sewage treatment plant

Value: 10 mg/l

PNEC : Soil
Value: 0,571 mg/kg dry weight (d.w.)

8.2 Exposure controls

Exposure assessment: Exposures are dependent on the product being handled, the potential for chemical release, and any resulting airborne concentrations or dermal contact. Since product handling and release scenarios vary, and no two workplaces are exactly alike, it is recommended that the potential for exposure be assessed prior to the prod-uct's use or introduction. Exposure assessments should be performed by an occupational hygienist, industrial hygienist, or other qualified occupational or environmental health professional. An exposure assessment should be conducted to determine the efficacy of any ventilation and the need for additional PPE. The PPE indicated below are recommendations for worst-case scenario exposures. An exposure assessment will identify more applicable measures to be implemented. EN and ANSI standards are mentioned in the following recommendations, consult equivalent local standards when required.
PPE is always the last resort to avoid exposure. In any case technical and organisational measures have to be explored and used prior to the selection of PPE. The PPE selection is for operators trained to work with chemicals according to good industrial hygiene and safety practice. Operators have to be trained on the use of PPE.

8.2.1 Engineering measures

Use engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use the product only with adequate ventilation.

8.2.2 Personal protective equipment

Eye/face protection : Use safety goggles tested according to EN 166/ ANSI Z87.1 or equivalent local standard.

Hand protection : Use gloves when handling substance in open systems. Inspect gloves prior to use. Train operators for proper use.If only incidental exposure is expected: (work without direct contact to substance) use gloves tested according EN 16523-1/ASTM F739 or equivalent local standard breakthrough times at least 10 minutes, tested for chemicals indicated in chapter 3 of this SDS. Change gloves frequently.
If direct skin contact is expected: use gloves tested according to EN 16523-1/ASTM F739 or equivalent local standard, tested for chemicals indicated in chapter 3 of this SDS. Permeation time must exceed contact time.

Other skin protection : Wear working clothes covering arms and legs.

Respiratory protection	:	Respiratory protection should be worn when workplace exposures exceed exposure limit requirements or guidelines. If there are no applicable exposure limits or guidelines, use an approved respirator where there is a potential for adverse effects, including but not limited to respiratory irritation or odor, or where indicated by the exposure assessment. Selection of air-purifying or positive-pressure supplied-air will depend on the results of the exposure assessment which includes an evaluation of the specific operations and the potential airborne concentrations. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In case a risk analysis proved the cartridge respirator as acceptable, use type: ABEK-P3 (EN 14387) OR Combination Multi-gas/P100 (42CFR84.193; ANSI Z88.7 or equivalent local standard) as a backup to engineering controls. In absence of engineering controls, use self-contained breathing apparatus or full face supplied air respirators. Use respirators and components tested and approved under appropriate government standards such as CEN (EU) or NIOSH 42 CFR 84(US).
Thermal hazards	:	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	:	Remove contaminated clothing and protective equipment before entering eating areas. Do not eat, drink or smoke during work. Wash hands any time after handling the product.

8.2.3 Environmental exposure controls

General advice	:	Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	liquid
Colour	:	Pale yellow
Taste	:	not determined
Odour	:	Ambery, Floral, musty, Agrestic
Odour Threshold	:	3,9547 ng/l
Flash point	:	120 °C Method: Pensky-Martens closed cup
Lower explosion limit	:	not determined
Upper explosion limit	:	not determined

Flammability	:	no data available
Particle size	:	no data available
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Auto-ignition temperature	:	280 ℃ Method: DIN 51794
Decomposition temperature	:	no data available
Molecular weight	:	224,40 g/mol
pH	:	no data available
Melting point	:	< -80 ℃
Boiling point	:	272 ℃ at 1 013 hPa
Vapour pressure	:	0,0046 hPa at 20 ℃ Method: OECD Test Guideline 104 0,0087 hPa at 25 ℃ Method: OECD Test Guideline 104
Density	:	947,29 kg/m3 at 20 ℃
Bulk density	:	Not applicable
Water solubility	:	51 mg/l at 20 ℃
Solubility/qualitative	:	practically insoluble
Partition coefficient: n-octanol/water	:	log Pow: 4,3 Method: OECD Test Guideline 117
Viscosity, kinematic	:	no data available
Relative vapour density	:	no data available
Surface tension	:	53,6 mN/m at 20 ℃ Method: OECD Test Guideline 115
Evaporation rate	:	no data available
Explosive properties	:	Not explosive

9.2 Other information

Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid	:	no data available

10.5 Incompatible materials

Materials to avoid : Not applicable

10.6 Hazardous decomposition products

Hazardous decomposition products : no data available
Thermal decomposition : no data available

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Acute oral toxicity : LD50 Rat
Dose: > 2 000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : This information is not available.

Acute dermal toxicity : LD50 Rabbit
Dose: > 5 000 mg/kg

Acute toxicity (other routes of administration) : No data is available on the product itself.

Skin corrosion/irritation

Skin irritation : Species: reconstructed human epidermis (RhE)
Skin irritation
Method: OECD Test Guideline 439
May cause skin irritation in susceptible persons.

Serious eye damage/eye irritation

Eye irritation : Species: Bovine cornea
No eye irritation
Method: OECD Test Guideline 437
Vapours may cause irritation to the eyes, respiratory system and the skin.

Respiratory or skin sensitisation

Sensitisation	:	Skin sensitization Guinea pig Result: Does not cause skin sensitisation. at 10 % in Alcohol Maximisation Test Guinea pig Result: Does not cause skin sensitisation. Result: Does not cause skin sensitisation. Method: OECD Test Guideline 442C KeratinoSens assay Result: Does not cause skin sensitisation. Method: OECD Test Guideline 442D

Germ cell mutagenicity

Genotoxicity in vitro	:	Ames test negative Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Micronucleus test negative Method: OECD Test Guideline 487 In vitro mammalian cell gene mutation test negative Method: OECD Test Guideline 476

Carcinogenicity

Carcinogenicity	:	No data is available on the product itself.

Reproductive toxicity

Not classified due to lack of data.

Target Organ Systemic Toxicant - Single exposure

Target Organ Systemic Toxicant - Single exposure	:	No data is available on the product itself.

Target Organ Systemic Toxicant - Repeated exposure

Target Organ Systemic Toxicant - Repeated exposure	:	Species: Rat, male and female Exposure time: 28 d () NOAEL: 97 mg/kg Method: OECD Test Guideline 422

Target Organ Systemic Toxicant - Repeated exposure
Aspiration hazard

Aspiration toxicity : No data is available on the product itself.

Phototoxicity

Phototoxicity : Phototoxicity Guinea pig
Result:negative

Further information : no data available

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : no data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 9,1 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 8,4 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic : ErC50 (Pseudokirchneriella subcapitata (green algae)): 25

plants		mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 GLP: yes ErC10 (Pseudokirchneriella subcapitata (green algae)): 9 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 GLP: yes

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Product:

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301 F GLP: yes Result: Not inherently biodegradable. Biodegradation: 4 % Exposure time: 28 d Method: OECD Test Guideline 302 C GLP: yes

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation

(EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Send to a licensed waste management company. Dispose of in accordance with local, state and federal regulations. The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container.
Contaminated packaging	:	Do not expose containers to high temperatures such as in hot work processes. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number

ADR	:	UN 3082
RID	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexanone)
RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

		N.O.S. (4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexanone)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexanone)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexanone)

14.3 Transport hazard class(es)

ADR	:	9
RID	:	9
IMDG	:	9
IATA	:	9

14.4 Packing group

ADR	:	III
RID	:	III
IMDG	:	III
IATA	:	III

14.5 Environmental hazards

ADR Environmentally hazardous	:	yes
RID Environmentally hazardous	:	yes
IMDG Marine pollutant	:	yes
IATA (Passenger) Environmentally hazardous	:	yes
IATA (Cargo) Environmentally hazardous	:	yes

14.6 Special precautions for user

ADR Tunnel restriction code	:	(-)
IMDG IMDG Code Segregation Group	:	None

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Neither banned nor restricted

Major Accident Hazard Legislation : ENVIRONMENTAL HAZARDS
E2
Quantity 1: 200 t
Quantity 2: 500 t

Water hazard class (Germany) : WGK 2 obviously hazardous to water
Code Number: 5 767

15.2 Chemical safety assessment

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

SECTION 16: Other information

Full list of Emergency response numbers worldwide.

	Country	Phone nr		Country	Phone nr
Europe	All Europe	+44 1235 239670	APAC	All East/South East Asia	+65 3158 1074
	France	+33 1 72 11 00 03		Sri Lanka	+65 3158 1195
	Germany	+49 89 220 61012		Taiwan	+886 2 8793 3212
	Spain	+34 91 114 2520		Japan	0120 015 230
	Italy	800 699 792		Indonesia	007 803 011 0293
	Netherlands	+31 10 713 8195		Malaysia	+60 3 6207 4347
	Turkey	0800 621 2139 +44 1235 239670		Thailand	001 800 120 666 751
	Norway	+47 2103 4452		India	+65 3158 1198 000 800 100 7479
	Greece	+30 21 1198 3182		Pakistan	+65 3158 1329
	Portugal	+351 30880 4750		Bangladesh	+65 3158 1200
	Denmark	+45 8988 2286		Philippines	+63 2 8231 2149
	Sweden	+46 8 566 42573		Vietnam	+84 28 4458 2388
	Poland	+48 22 307 3690		Korea	+65 3158 1285
	Czech replublic	+420 228 882 830		South Korea	+82 2 3479 8401

Administrative information:
Report Information: SDS_FR/EN/GHS_SDS_EU_CNTRY/44
Sales & Distribution Information: VE01/FR/CH11/01
Shipping Order Information: 31 505 077/27 055 674

	Finland	+358 9 7479 0199		Australia	+61 2 8014 4558
Middle East/Africa	All Middle East/Africa	+44 1235 239671		New Zealand	+64 9 929 1483
	Bahrain and Middle East	+44 1235 239671		China	+86 532 8388 9090
	Africa/South Africa	+27 21 300 2732	LATAM	Mexico	+52 55 5004 8763
NOAM	USA and Canada	+1 866 928 0789		Brazil	+55 11 3197 5891
	USA and Canada	+1 215 207 0061		Chile	+56 2 2582 9336
	USA and Canada	+1 202 464 2554		Colombia	+57 1 508 7337
Global	Global	+44 1865 407333		Argentina	+54 11 5984 3690

Key or legend to abbreviations and acronyms used in the safety data sheet

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; 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; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

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.

Information displayed in section 3 (Composition/information on ingredients) is additional information to understand the hazards of the product and ensure safe handling, storage and transportation. This information, including CAS numbers, is not meant to be used for registration, notification or any other purposes. Any additional information and documentation needed may be provided by Givaudan.

Annex

Exposure Scenario

Number	Title
ES1	Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds)
ES2	Formulation of fragranced end-products (mixing of fragrance compounds into fragranced end-products)
ES3	Industrial end-use of washing and cleaning products
ES4	Professional end-use of washing and cleaning products
ES5	Professional end-use of polishes and wax blends
ES6	Consumer end-use of washing and cleaning products
ES7	Consumer end-use of air care products
ES8	Consumer end-use of biocides
ES9	Consumer end-use of polishes and wax blends
ES10	Consumer (and Professional) end-use of cosmetics

ES1: Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds)

1.1. Title section

Structured Short Title	:	Service life - workers; Formulation [mixing] of preparations and/or re-packaging (SU10).

Environment		
CS1	Formulation into mixture	ERC2
Worker		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
CS4	Mixing or blending in batch processes	PROC5
CS5	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a

CS6	Transfer of substance or mixture (charging/discharging) at dedicated	PROC8b facilities
CS7	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS8	Use as laboratory reagent	PROC15

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2)

Amount used, frequency and duration of use (or from service life)		
Daily amount per site	:	20 kg

Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment : Can be landfilled or incinerated, when in compliance with local regulations.		

Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Other conditions affecting environmental exposure		
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

1.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.3. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.4. Control of worker exposure: Mixing or blending in batch processes (PROC5)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 95 %
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %
Other conditions affecting workers exposure

Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics
Covers percentage substance in the product up to 25 %.

Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)

Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %
Other conditions affecting workers exposure

Body parts exposed	:	Assumes 2 hands face only (480 cm2)

Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.2.8. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 15 min
Use frequency	:	220 days/year
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %		
Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2)

Release route	Release rate	Release estimation method
Water	0,1 kg/day	IFRA SpERC 2.1a.v1
Air	0,5 kg/day	IFRA SpERC 2.1a.v1
Soil	0 kg/day	IFRA SpERC 2.1a.v1

Compartment	Exposure level	RCR
Freshwater	0,00348 mg/L (EUSES v2.1)	0,414
Freshwater sediment	1,191 mg/kg dry weight (EUSES v2.1)	0,415
Marine water	0,000348 mg/L (EUSES v2.1)	0,414
Marine sediment	0,119 mg/kg dry weight (EUSES v2.1)	0,415
Sewage treatment plant	0,035 mg/L (EUSES v2.1)	< 0,01
Soil	0,562 mg/kg dry weight (EUSES v2.1)	0,984

1.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,002 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	systemic	short-term	0,037 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	long-term	0,002 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,037 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,001 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
dermal	local	long-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

1.3.3. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR

inhalative	systemic	long-term	0,505 mg/m³	0,074
			(ECETOC TRA worker v3)	
inhalative	systemic	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,492
inhalative	local	long-term	0,505 mg/m³ (ECETOC TRA worker v3)	0,03
inhalative	local	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,197
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,036
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,109

1.3.4. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,841 mg/m³ (ECETOC TRA worker v3)	0,123
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,841 mg/m³ (ECETOC TRA worker v3)	0,049
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,707
dermal	local	long-term	0,2 mg/cm2 (ECETOC TRA worker v3)	0,041

dermal	local	short-term	0,2 mg/cm2 (ECETOC TRA worker v3)	0,041
combined routes	systemic	long-term		0,83

1.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,101 mg/m³ (ECETOC TRA worker v3)	0,015
inhalative	systemic	short-term	0,673 mg/m³ (ECETOC TRA worker v3)	0,098
inhalative	local	long-term	0,101 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,673 mg/m³ (ECETOC TRA worker v3)	0,039
dermal	systemic	long-term	0,823 mg/kg bw/day (ECETOC TRA worker v3)	0,424
dermal	local	long-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
dermal	local	short-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
combined routes	systemic	long-term		0,439

1.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,016

inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	0,823 mg/kg	0,424
			bw/day (ECETOC TRA worker v3)	
dermal	local	long-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
dermal	local	short-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
combined routes	systemic	long-term		0,465

1.3.7. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,168 mg/m³ (ECETOC TRA worker v3)	0,025
inhalative	systemic	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,492
inhalative	local	long-term	0,168 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,197
dermal	systemic	long-term	0,412 mg/kg bw/day (ECETOC TRA worker v3)	0,212
dermal	local	long-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
dermal	local	short-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
combined routes	systemic	long-term		0,237

1.3.8. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR

inhalative	systemic	long-term	0,14 mg/m³ (ECETOC TRA worker v3)	0,021
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,14 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	0,018
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,038

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES2: Formulation of fragranced end-products (mixing of fragrance compounds into fragranced end-products)

2.1. Title section

Structured Short Title	:	Service life - workers; Formulation [mixing] of preparations and/or re-packaging (SU10).

Environment		
CS1	Formulation into mixture	ERC2
Worker		

CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
CS4	Mixing or blending in batch processes	PROC5
CS5	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS6	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS7	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS8	Tabletting, compression, extrusion, pelettisation, granulation	PROC14
CS9	Use as laboratory reagent	PROC15

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Formulation into mixture (ERC2)

Amount used, frequency and duration of use (or from service life)		
Daily amount per site	:	30 kg
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment : Can be landfilled or incinerated, when in compliance with local regulations.		
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
Other conditions affecting environmental exposure		
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

2.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %		
Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.3. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.4. Control of worker exposure: Mixing or blending in batch processes (PROC5)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure

Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 240 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 95 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.8. Control of worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.2.9. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 15 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Formulation into mixture (ERC2)

Release route	Release rate	Release estimation method
Water	0,003 kg/day	IFRA SpERC Group: SG-1
Air	0 kg/day	IFRA SpERC Group: SG-1
Soil	0 kg/day	IFRA SpERC Group: SG-1

Compartment	Exposure level	RCR
Freshwater	0,00013 mg/L (EUSES v2.1)	0,016
Freshwater sediment	0,045 mg/kg dry weight (EUSES v2.1)	0,016

Marine water	0,0000128 mg/L (EUSES v2.1)	0,015
Marine sediment	0,0044 mg/kg dry weight (EUSES v2.1)	0,015
Sewage treatment plant	0,00104 mg/L (EUSES v2.1)	< 0,01
Soil	0,017 mg/kg dry weight (EUSES v2.1)	0,03

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,011 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	systemic	short-term	0,224 mg/m³ (ECETOC TRA worker v3)	0,033
inhalative	local	long-term	0,011 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,224 mg/m³ (ECETOC TRA worker v3)	0,013
dermal	systemic	long-term	0,02 mg/kg bw/day (ECETOC TRA worker v3)	0,011
dermal	local	long-term	0,006 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,006 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,012

2.3.3. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,303 mg/m³ (ECETOC TRA worker v3)	0,044

inhalative	systemic	short-term	2,019 mg/m³ (ECETOC TRA worker v3)	0,295
inhalative	local	long-term	0,303 mg/m³ (ECETOC TRA worker v3)	0,018
inhalative	local	short-term	2,019 mg/m³ (ECETOC TRA worker v3)	0,118
dermal	systemic	long-term	0,041 mg/kg bw/day (ECETOC TRA worker v3)	0,021
dermal	local	long-term	0,012 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,012 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,066

2.3.4. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,505 mg/m³ (ECETOC TRA worker v3)	0,074
inhalative	systemic	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,492
inhalative	local	long-term	0,505 mg/m³ (ECETOC TRA worker v3)	0,03
inhalative	local	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,197
dermal	systemic	long-term	0,823 mg/kg bw/day (ECETOC TRA worker v3)	0,424
dermal	local	long-term	0,12 mg/cm2 (ECETOC TRA worker v3)	0,025
dermal	local	short-term	0,12 mg/cm2 (ECETOC TRA worker v3)	0,025
combined routes	systemic	long-term		0,498

2.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,561 mg/m³ (ECETOC TRA worker v3)	0,082
inhalative	systemic	short-term	3,739 mg/m³ (ECETOC TRA worker v3)	0,547
inhalative	local	long-term	0,561 mg/m³ (ECETOC TRA worker v3)	0,033
inhalative	local	short-term	3,739 mg/m³ (ECETOC TRA	0,219
			worker v3)	
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,153

2.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,084 mg/m³ (ECETOC TRA worker v3)	0,012
inhalative	systemic	short-term	1,683 mg/m³ (ECETOC TRA worker v3)	0,246
inhalative	local	long-term	0,084 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	1,683 mg/m³ (ECETOC TRA worker v3)	0,098

dermal	systemic	long-term	0,823 mg/kg bw/day (ECETOC TRA worker v3)	0,424
dermal	local	long-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
dermal	local	short-term	0,06 mg/cm2 (ECETOC TRA worker v3)	0,012
combined routes	systemic	long-term		0,436

2.3.7. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,093 mg/m³ (ECETOC TRA worker v3)	0,014
inhalative	systemic	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,273
inhalative	local	long-term	0,093 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,109
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,035
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,049

2.3.8. Worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,467 mg/m³ (ECETOC TRA worker v3)	0,068

inhalative	systemic	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,273
inhalative	local	long-term	0,467 mg/m³ (ECETOC TRA worker v3)	0,027
inhalative	local	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,109
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	0,018
dermal	local	long-term	0,005 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,005 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,086

2.3.9. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,084 mg/m³ (ECETOC TRA worker v3)	0,012
inhalative	systemic	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,492
inhalative	local	long-term	0,084 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	3,365 mg/m³ (ECETOC TRA worker v3)	0,197
dermal	systemic	long-term	0,02 mg/kg bw/day (ECETOC TRA worker v3)	0,011
dermal	local	long-term	0,006 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,006 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,023

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES3: Industrial end-use of washing and cleaning products

3.1. Title section

Structured Short Title	:	Service life - workers; Industrial uses (SU3).

Environment		
CS1	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)	ERC4
Worker		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS4	Chemical production where opportunity for exposure arises	PROC4
CS5	Industrial spraying	PROC7
CS6	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS7	Roller application or brushing	PROC10
CS8	Treatment of articles by dipping and pouring	PROC13
Consumer		
CS9	Washing and cleaning products (including solvent based products)	PC35

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

In accordance with IFRA REACH Exposure Scenarios (ES) for Fragrance Substances, ERC4 can be considered under ERC8. The total tonnage of all end-uses is covered under ES6.

3.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year
Technical and organisational conditions and measures		
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %		
Other conditions affecting workers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

3.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

3.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure

Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

3.2.5. Control of worker exposure: Industrial spraying (PROC7)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 90 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands and forearms (1500 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

3.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

3.2.7. Control of worker exposure: Roller application or brushing (PROC10)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

3.2.8. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 90 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Additional information on exposure estimation
In accordance with IFRA REACH Exposure Scenarios (ES) for Fragrance Substances, ERC4 can be considered under ERC8. The total tonnage of all end-uses is covered under ES6.

3.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR

inhalative	systemic	long-term	0,006 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	systemic	short-term	0,026 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	long-term	0,006 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,026 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
dermal	local	long-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

3.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,654 mg/m³	0,096
			(ECETOC TRA worker v3)	
inhalative	systemic	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,383
inhalative	local	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,038
inhalative	local	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,153
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01

dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,166

3.3.4. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	1,402 mg/m³ (ECETOC TRA worker v3)	0,205
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	1,402 mg/m³ (ECETOC TRA worker v3)	0,082
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,354
dermal	local	long-term	0,1 mg/cm2 (ECETOC TRA worker v3)	0,021
dermal	local	short-term	0,1 mg/cm2 (ECETOC TRA worker v3)	0,021
combined routes	systemic	long-term		0,559

3.3.5. Worker exposure: Industrial spraying (PROC7)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,476 mg/m³ (ECETOC TRA worker v3)	0,09
inhalative	systemic	short-term	9,523 mg/m³ (ECETOC TRA worker v3)	0,9
inhalative	local	long-term	0,476 mg/m³ (ECETOC TRA worker v3)	0,036

inhalative	local	short-term	9,523 mg/m³ (ECETOC TRA worker v3)	0,36
dermal	systemic	long-term	0,429 mg/kg bw/day (ECETOC TRA worker v3)	0,286
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

3.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,016
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC	0,071
			TRA worker v3)	
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,112

3.3.7. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR

inhalative	systemic	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,096
inhalative	systemic	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,383
inhalative	local	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,038
inhalative	local	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,153
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,141
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,237

3.3.8. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,935 mg/m³ (ECETOC TRA worker v3)	0,137
inhalative	systemic	short-term	3,739 mg/m³ (ECETOC TRA worker v3)	0,547
inhalative	local	long-term	0,935 mg/m³	0,055
			(ECETOC TRA worker v3)	
inhalative	local	short-term	3,739 mg/m³ (ECETOC TRA worker v3)	0,219
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01

dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,207

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES4: Professional end-use of washing and cleaning products

4.1. Title section

Structured Short Title	:	Widespread use by professional workers; Professional uses (SU22).

Environment
CS1 Widespread use of non-reactive processing aid (no inclusion into or ERC8a onto article, indoor)

Worker		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS4	Chemical production where opportunity for exposure arises	PROC4
CS5	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS6	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS7	Roller application or brushing	PROC10
CS8	Non-industrial spraying	PROC11
CS9	Treatment of articles by dipping and pouring	PROC13

Consumer		
CS10	Washing and cleaning products (including solvent based products)	PC35

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

The total tonnage of all end-uses is considered under ES6.

4.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	One hand face only (240 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

4.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

4.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

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

Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands face only (480 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

4.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.
Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

4.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 15 min
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

4.2.7. Control of worker exposure: Roller application or brushing (PROC10)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)

Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

4.2.8. Control of worker exposure: Non-industrial spraying (PROC11)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 90 %		
Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands and forearms (1500 cm2)
Indoor or outdoor use	:	Outdoor use
Temperature	:	< 40 °C

4.2.9. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year
Technical and organisational conditions and measures		

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	2 hands face only (480 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

4.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,009 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	systemic	short-term	0,037 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	long-term	0,009 mg/m³ (ECETOC TRA	< 0,01
			worker v3)	
inhalative	local	short-term	0,037 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01

dermal	local	long-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,001 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

4.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	1,402 mg/m³ (ECETOC TRA worker v3)	0,205
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	1,402 mg/m³ (ECETOC TRA worker v3)	0,082
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,276

4.3.4. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,096
inhalative	systemic	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,383

inhalative	local	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,038
inhalative	local	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,153
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,354
dermal	local	long-term	0,1 mg/cm2 (ECETOC TRA worker v3)	0,021
dermal	local	short-term	0,1 mg/cm2 (ECETOC TRA worker v3)	0,021
combined routes	systemic	long-term		0,449

4.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,701 mg/m³ (ECETOC TRA worker v3)	0,103
inhalative	systemic	short-term	2,804 mg/m³ (ECETOC TRA worker v3)	0,41
inhalative	local	long-term	0,701 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	local	short-term	2,804 mg/m³ (ECETOC TRA worker v3)	0,164
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA	< 0,01
			worker v3)	
combined routes	systemic	long-term		0,173

4.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,096
inhalative	systemic	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,383
inhalative	local	long-term	0,654 mg/m³ (ECETOC TRA worker v3)	0,038
inhalative	local	short-term	2,617 mg/m³ (ECETOC TRA worker v3)	0,153
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,166

4.3.7. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,701 mg/m³ (ECETOC TRA worker v3)	0,103
inhalative	systemic	short-term	2,804 mg/m³ (ECETOC TRA worker v3)	0,41
inhalative	local	long-term	0,701 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	local	short-term	2,804 mg/m³ (ECETOC TRA worker v3)	0,164
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,141

dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,244

4.3.8. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,016
inhalative	local	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	1,071 mg/kg bw/day (ECETOC TRA worker v3)	0,552
dermal	local	long-term	0,05 mg/cm2 (ECETOC TRA worker v3)	0,01
dermal	local	short-term	0,05 mg/cm2 (ECETOC TRA worker v3)	0,01
combined routes	systemic	long-term		0,593

4.3.9. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,056 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	systemic	short-term	1,122 mg/m³ (ECETOC TRA worker v3)	0,164

inhalative	local	long-term	0,056 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	1,122 mg/m³ (ECETOC TRA worker v3)	0,066
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,079

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES5: Professional end-use of polishes and wax blends

5.1. Title section

Structured Short Title	:	Widespread use by professional workers; Professional uses (SU22).

Environment		
CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC8a
Worker		
CS2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2

CS3	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS4	Roller application or brushing	PROC10
CS5	Non-industrial spraying	PROC11
Consumer		
CS6	Polishes and wax blends	PC31

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

The total tonnage of all end-uses is considered under ES6.

5.2.2. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 8 h
Use frequency	:	220 days/year
Technical and organisational conditions and measures		
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %		
Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands face only (480 cm2)

Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

5.2.3. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 60 min
Use frequency	:	220 days/year
Technical and organisational conditions and measures		
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 0 %		
Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

5.2.4. Control of worker exposure: Roller application or brushing (PROC10)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		

Duration	:	Application duration < 8 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection. Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands (960 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

5.2.5. Control of worker exposure: Non-industrial spraying (PROC11)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Duration	:	Application duration < 1 h
Use frequency	:	220 days/year

Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Dermal - minimum efficiency of 0 % Inhalation - minimum efficiency of 0 %

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection. Wear a respirator conforming to EN140. Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 90 %

Other conditions affecting workers exposure		
Body parts exposed	:	Assumes 2 hands and forearms (1500 cm2)
Indoor or outdoor use	:	Indoor use
Temperature	:	< 40 °C

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

5.3.2. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,467 mg/m³ (ECETOC TRA worker v3)	0,068
inhalative	systemic	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,273
inhalative	local	long-term	0,467 mg/m³ (ECETOC TRA worker v3)	0,027
inhalative	local	short-term	1,869 mg/m³ (ECETOC TRA worker v3)	0,109
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
dermal	local	long-term	0,002 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,002 mg/cm2 (ECETOC TRA	< 0,01
			worker v3)	
combined routes	systemic	long-term		0,075

5.3.3. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,187 mg/m³ (ECETOC TRA worker v3)	0,027
inhalative	systemic	short-term	3,739 mg/m³ (ECETOC TRA worker v3)	0,547
inhalative	local	long-term	0,187 mg/kg bw/day (ECETOC TRA worker v3)	0,011
inhalative	local	short-term	3,739 mg/kg bw/day (ECETOC TRA worker v3)	0,219
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,071
dermal	local	long-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,01 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,098

5.3.4. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,818 mg/m³ (ECETOC TRA worker v3)	0,12
inhalative	systemic	short-term	3,272 mg/m³ (ECETOC TRA worker v3)	0,478
inhalative	local	long-term	0,818 mg/kg bw/day (ECETOC TRA worker v3)	0,048
inhalative	local	short-term	3,272 mg/kg bw/day (ECETOC TRA worker v3)	0,191
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,141

dermal	local	long-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
dermal	local	short-term	0,02 mg/cm2 (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,261

5.3.5. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,28 mg/m³ (ECETOC TRA worker v3)	0,041
inhalative	systemic	short-term	5,608 mg/m³ (ECETOC TRA worker v3)	0,82
inhalative	local	long-term	0,28 mg/kg bw/day (ECETOC TRA worker v3)	0,016
inhalative	local	short-term	5,608 mg/kg bw/day (ECETOC TRA worker v3)	0,328
dermal	systemic	long-term	1,071 mg/kg bw/day (ECETOC TRA worker v3)	0,552
dermal	local	long-term	0,05 mg/cm2 (ECETOC TRA worker v3)	0,01
dermal	local	short-term	0,05 mg/cm2 (ECETOC TRA worker v3)	0,01
combined routes	systemic	long-term		0,593

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES6: Consumer end-use of washing and cleaning products

6.1. Title section

Structured Short Title	:	Service life - consumers; Consumer uses (SU21).

Environment		
CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC8d
Consumer		
CS2	Washing and cleaning products (including solvent based products)	PC35

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

Amount used, frequency and duration of use (or from service life)		
Daily amount per site	:	0,011 kg
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
Other conditions affecting environmental exposure		
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

6.2.2. Control of consumer exposure: Washing and cleaning products (including solvent based products) (PC35)

Product (article) characteristics		
Covers concentrations up to 0,15 %		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		

Use frequency	:	Covers exposure up to 1 events per day

Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

Release route	Release rate	Release estimation method
Water	0,011 kg/day	Environmental Release Category (ERC)
Air	0,011 kg/day	Environmental Release Category (ERC)
Soil	0,002 kg/day	Environmental Release Category (ERC)

Compartment	Exposure level	RCR
Freshwater	0,000406 mg/L (EUSES v2.1)	0,048
Freshwater sediment	0,139 mg/kg dry weight (EUSES v2.1)	0,048
Marine water	0,0000405 mg/L (EUSES v2.1)	0,048
Marine sediment	0,014 mg/kg dry weight (EUSES v2.1)	0,048
Sewage treatment plant	0,00382 mg/L (EUSES v2.1)	< 0,01
Soil	0,062 mg/kg dry weight (EUSES v2.1)	0,108

6.3.2. Consumer exposure: Washing and cleaning products (including solvent based products) (PC35)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
inhalative	local	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,214 mg/kg bw/day (ECETOC TRA consumer v3)	0,286

oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,221

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES7: Consumer end-use of air care products

7.1. Title section
Structured Short Title

:

Environment		
CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC8a
Consumer		
CS2	Air care products	PC3

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

The total tonnage of all end-uses is considered under ES6.

7.2.2. Control of consumer exposure: Air care products (PC3)

Product (article) characteristics

Covers concentrations up to 0,1 %		
Physical form of product	:	Liquid

Amount used, frequency and duration of use (or from service life)		
Use frequency	:	Covers exposure up to 1 events per day

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

7.3.2. Consumer exposure: Air care products (PC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,435 mg/m³	0,257
			(ECETOC TRA consumer v3)	
inhalative	local	long-term	0,435 mg/m³ (ECETOC TRA consumer v3)	0,103
dermal	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,257

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES8: Consumer end-use of biocides

8.1. Title section
Structured Short Title

:

Environment		
CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC8d
Consumer		
CS2	Biocidal products (e.g. Disinfectants, pest control)	PC8

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

The total tonnage of all end-uses is considered under ES6.

8.2.2. Control of consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8)

Product (article) characteristics		
Covers concentrations up to 0,05 %		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Use frequency	:	Covers exposure up to 1 events per day
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to upper part of the body.

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

8.3.2. Consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,095 mg/m³ (ECETOC TRA consumer v3)	0,056
inhalative	local	long-term	0,095 mg/m³ (ECETOC TRA consumer v3)	0,023
dermal	systemic	long-term	0,729 mg/kg bw/day (ECETOC TRA consumer v3)	0,752
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,808

8.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).
ES9: Consumer end-use of polishes and wax blends

9.1. Title section
Structured Short Title

:

Environment

CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC8a
Consumer		
CS2	Polishes and wax blends	PC31

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

The total tonnage of all end-uses is considered under ES6.

9.2.2. Control of consumer exposure: Polishes and wax blends (PC31)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Use frequency	:	Covers exposure up to 1 events per day
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

9.3.2. Consumer exposure: Polishes and wax blends (PC31)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR

inhalative	systemic	long-term	0,021 mg/m³ (ECETOC TRA consumer v3)	0,012
inhalative	local	long-term	0,021 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,036 mg/kg bw/day (ECETOC TRA consumer v3)	0,037
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,049

9.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).

ES10: Consumer (and Professional) end-use of cosmetics

10.1. Title section
Structured Short Title

:

Environment		
CS1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC8a
Consumer		
CS2	Perfumes, fragrances, Cosmetics, personal care products	PC28, PC39

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

The total tonnage of all end-uses is considered under ES6.

10.2.2. Control of consumer exposure: Perfumes, fragrances (PC28) / Cosmetics, personal care products (PC39)
Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note:
For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation

10.3. Exposure estimation and reference to its source

10.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
The total tonnage of all end-uses is considered under ES6.

10.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

As the environmental release factor depends on site specific operational conditions and risk management measures, Downstream Users (DU) are advised to demonstrate that a safe use is given for the amounts used at their site. Scaling may be a suitable option in this case, (ECHA Guidance for downstream users and Guidance on the compilation of safety data sheets).
Scaling is a comparison of linear input parameters and determinants between data presented in the Exposure Scenario (ES) and the data available from the Downstream User to determine the risk characterisation ratios (RCR) under the operational conditions of the DU (eg. quantity of substance used per year and site, emission fraction to water, number of emission days).