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

1.1 Product identifier

- Trade name: AUGEO® CLEAN MULTI
- Chemical name: Racemic mixture (+/-)-2,2-dimethyl-4-hydroxymethyl-1,3-dioxolane
- CAS-No.: 100-79-8
- REACH : Registration number: 01-2120066005-66-0000

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

Uses of the Substance/Mixture

- Cleaning agent
- Waxes
- Stain removers and waxes removers
- Glass cleaner
- diluent and vehicle for fragrances

Remarks

- For professional and industrial installation and use only.

1.3 Details of the supplier of the safety data sheet

Company

Baked Games SRL
Romania, Bucuresti, Sector 4, Soseaua Giurgiului nr 321
contact@kitlumanari.ro

E-mail address

contact@kitlumanari.ro

1.4 Emergency telephone number

112

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (Regulation (EC) No 1272/2008)

Eye irritation, Category 2	H319: Causes serious eye irritation.

2.2 Label elements

Regulation (EC) No 1272/2008

Pictogram

Signal word

- Warning

Hazard statements

- H319 Causes serious eye irritation.

Precautionary statements

Prevention

- P264 Wash skin thoroughly after handling.
- P280 Wear eye protection/ face protection.

Response

- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.

2.3 Other hazards which do not result in classification

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 Substance

- Chemical name: Racemic mixture (+/-)-2,2-dimethyl-4-hydroxymethyl-1,3-dioxolane
- Synonyms: (+/-)-2,2-dimethyl-1,3-dioxolane-4-methanol, Isopropylidene glycerol
- Formula: C6H12O3

Information on Components and Impurities

Chemical name	Identification number	Classification Regulation (EC) No 1272/2008	SCL, M-factor, ATE	Concentration [%]
2,2-dimethyl-1,3-dioxolan-4-ylmethanol	CAS-No. : 100-79-8 EINECS-No. : 202-888-7	Eye irritation, Category 2 ; H319	ATE (Oral): 7.000 mg/kg ATE (Dermal): > 2.000 mg/kg ATE (Inhalation): > 5,11 mg/l (aerosol)	>= 99 - <= 100
	Registration number: 01-2120066005-66-xxxx			

For the full text of the H-Statements mentioned in this Section, see Section 16.

3.2 Mixture

- Not applicable, this product is a substance.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice

- First aider needs to protect himself.
- Show this safety data sheet to the doctor in attendance.
- Place affected clothing in a sealed bag for subsequent decontamination.
- When symptoms persist or in all cases of doubt seek medical advice.

In case of inhalation

- Quickly move the person away from the contaminated area. Make the affected person rest.
- Obtain medical attention.

In case of skin contact

- Wash off immediately with plenty of water for at least 15 minutes.
- Use appropriate protective equipment when treating a contaminated person.
- In case of inflammation (redness, irritation, ...) obtain medical attention.

In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Keep eye wide open while rinsing.
- Always obtain medical advice, even if there are no symptoms.

In case of ingestion

- Do NOT induce vomiting.
- Obtain medical attention.
- Do not give anything to drink.

4.2 Most important symptoms and effects, both acute and delayed

Effects

- Chronic exposure may cause dermatitis.
- May cause irreversible eye damage.
- Loss of the eye

Symptoms

- Redness
- Swelling of tissue
- Causes skin burns.
- Lachrymation
- Conjunctivitis
- Causes eye burns.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

- Burns must be treated by a physician.
- Contact a poison control center.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

- Extinguishing media - small fires
- Water spray
- Multi-purpose powders
- Carbon dioxide (CO2)
- Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF)

- Extinguishing media - large fires
- Water spray
- Multi-purpose powders
- Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF)

- Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media

- Do not use a solid water stream as it may scatter and spread fire.

- High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting

- Combustible liquid.

- The pressure in sealed containers can increase under the influence of heat.

- Hazardous decomposition products formed under fire conditions.
- High concentrations of toxic or harmful products may remain in the residual liquid once the fire has been extinguished.

- Under fire conditions:
- Will burn
- On combustion, toxic gases are released.

Hazardous combustion products:

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

5.3 Advice for firefighters

Special protective equipment for firefighters

- Wear full protective clothing and self-contained breathing apparatus.
- Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing.
- In the event of fire, wear self-contained breathing apparatus.
- For further information refer to section 8 "Exposure controls/personal protection".

Specific fire fighting methods

- Stay upwind.

- Fight fire with normal precautions from a reasonable distance.

- Do not use a solid water stream as it may scatter and spread fire.
- Cool down the containers/equipment exposed to heat with a water spray. Ensure that there is NO direct contact between the water and the product.
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

- Cool containers/tanks with water spray.
- Do not use a solid water stream as it may scatter and spread fire.

Further information

- Evacuate personnel to safe areas.

- Intervention only by capable personnel who are trained and aware of the hazards of the product.
- Never approach containers which have been exposed to fire, without cooling them sufficiently.

- 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

- Avoid inhalation, ingestion and contact with skin and eyes.
- Wear chemical resistant personal protective equipment.
- Wear suitable gloves.
- Wear suitable protective clothing.

- Wear as appropriate:
- Face-shield
- Tightly fitting safety goggles.

- In the case of dust or aerosol formation use respirator with an approved filter.
- In the case of vapour formation use a respirator with an approved filter.

- Eliminate all ignition sources if safe to do so.

- Stop leak if safe to do so.

- For further information refer to section 8 "Exposure controls/personal protection".

6.2 Environmental precautions

- Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems.

- Prevent further leakage or spillage if safe to do so.
- Contain the spilled material by bunding.
- The product should not be allowed to enter drains, water courses or the soil.

6.3 Methods and materials for containment and cleaning up

- No sparking tools should be used.

- Stop leak if safe to do so.
- Dam up with sand or inert earth (do not use combustible materials).

- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).
- Shovel or sweep up.
- Keep in suitable, closed containers for disposal.
- Never return spills in original containers for re-use.

- Dispose of in accordance with local regulations.

6.4 Reference to other sections

- 7. HANDLING AND STORAGE
- 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
- 13. DISPOSAL CONSIDERATIONS

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Handle in accordance with good industrial hygiene and safety practice.

- Wear personal protective equipment.
- Wear suitable protective clothing.

- Avoid inhalation, ingestion and contact with skin and eyes.

- Avoid splashes.
- Avoid formation of aerosol.

- For personal protection, see section 8.

- Containers must be bonded and grounded when pouring or transferring material.
- This material contains a flammable or combustible liquid and vapor.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Use clean, well-maintained personal protection equipment.
- Regular cleaning of equipment, work area and clothing.
- When using do not eat, drink or smoke.
- Smoking, eating and drinking should be prohibited in the application area.
- Wash hands before breaks and immediately after handling the product.
- Contaminated work clothing should not be allowed out of the workplace.

- The user is responsible for monitoring the working environment in accordance with local laws and regulations.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

- Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems.

- Keep locked up or in an area accessible only to qualified or authorised persons.

- Keep containers tightly closed in a dry, cool and well-ventilated place.
- Keep away from open flames, hot surfaces and sources of ignition.
- Keep away from incompatible materials to be indicated by the manufacturer.

- Observe the general rules of industrial fire protection.
- Areas containing this material should have fire safe practices and electrical equipment in accordance with applicable regulations and/or guidelines. Standards are primarily based on the material`s flashpoint, but may also take into account properties such as miscibility with water or toxicity. All local and national regulations should be followed. In the Americas, National Fire Protection Association (NFPA) 30: Flammable and Combustible Liquids Code, is a widely used standard. NFPA 30 establishes storage conditions for the following classes of materials: Class I Flammable Liquids, Flashpoint <37.8 °C. Class II Combustible Liquids, 37.8 °C < Flashpoint <60 °C. Class IIIa Combustible Liquids, 60 °C < Flashpoint < 93 °C. Class IIIb Combustible Liquids, Flashpoint > 93 °C.
- Keep away from sources of ignition - No smoking.

Packaging material

Suitable material
- Unlined steel
- Plastic container of HDPE

7.3 Specific end use(s)

- no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- Contains no substances with occupational exposure limit values above their regulatory reporting threshold.

Derived No Effect Level (DNEL) / Derived minimal effect level (DMEL)

Product name	Population	Route of exposure	Potential health effects	Exposure time	Value	Remarks
2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Workers	Inhalation	Long-term systemic effects		60 mg/m3	
	Workers	Dermal	Long-term systemic effects		10 mg/kg bw/day	
	General population	Oral	Long-term systemic effects		5 mg/kg bw/day	
	General population	Inhalation	Long-term systemic effects		15 mg/m3	
	General population	Dermal	Long-term systemic effects		5 mg/kg bw/day	

Predicted No Effect Concentration (PNEC)

Product name	Compartment	Value	Remarks
2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Fresh water	0,2 mg/l	
	Intermittent use/release	46 mg/l	
	Marine water	0,02 mg/l	
	Sewage treatment plant	10 mg/l	
	Fresh water sediment	1,183 mg/kg dry weight (d.w.)	
	Marine sediment	0,1183 mg/kg dry weight (d.w.)	
	Soil	2,5 mg/kg dry weight (d.w.)	
	Oral (secondary poisoning)		No PNEC derivation as there is no potential for bioaccumulation.

8.2 Exposure controls

Control measures

Engineering measures

- Effective exhaust ventilation system.
- Ensure adequate ventilation.

- Extract at emission point.
- Ensure that extracted air cannot be returned to the workplace through the ventilation system.

- Avoid splashes.
- Avoid formation of aerosol.

Individual protection measures

Respiratory protection

- This should be achieved by a good general extraction and -if practically feasible- by the use of a local exhaust ventilation.
- Use a respirator with an approved filter if a risk assessment indicates this is necessary.
- Keep in a well-ventilated place.

Hand protection

- Where there is a risk of contact with hands, use appropriate gloves.
- Gloves must be inspected prior to use.

- Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
- Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

- The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Impervious gloves

Eye protection
- Tightly fitting safety goggles.
- Face-shield

- Chemical resistant goggles must be worn.
- Tightly fitting safety goggles.

Skin and body protection
- Full protective suit
- Footwear protecting against chemicals.

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

- Impervious clothing
- Change working clothes after each workshift.
- Contaminated work clothing should not be allowed out of the workplace.

Hygiene measures
- Handle in accordance with good industrial hygiene and safety practice.
- Use clean, well-maintained personal protection equipment.
- Regular cleaning of equipment, work area and clothing.
- When using do not eat, drink or smoke.
- Smoking, eating and drinking should be prohibited in the application area.
- Wash hands before breaks and immediately after handling the product.
- Contaminated work clothing should not be allowed out of the workplace.

- The user is responsible for monitoring the working environment in accordance with local laws and regulations.

Protective measures
- Emergency equipment immediately accessible, with instructions for use.
- Ensure that eyewash stations and safety showers are close to the workstation location.
- Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use.

- The protective equipment must be selected in accordance with current CEN standards and in cooperation with the supplier of the protective equipment.

Environmental exposure controls

- Dam up.
- Prevent product from entering sewage system.
- Try to prevent the material from entering drains or water courses.
- Local authorities should be advised if significant spillages cannot be contained.

- Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems.

- Prevent further leakage or spillage if safe to do so.
- Contain the spilled material by bunding.
- The product should not be allowed to enter drains, water courses or the soil.

- Dispose of rinse water in accordance with local and national regulations.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless
Odour	slight
Odour Threshold	No data available
Melting point/freezing point	Freezing point: -99 °C
Initial boiling point and boiling range	Boiling point/boiling range: 183 - 191 °C (1.013,25 hPa)
Flammability (solid, gas)	No data available
Flammability (liquids)	No data available
Flammability/Explosive limit	No data available
Flash point	91 °C closed cup 100 °C open cup
Auto-ignition temperature	No data available
Decomposition temperature	No data available
pH	Not applicable
Viscosity	Viscosity, dynamic : 11 mPa.s (20 °C)
Solubility	Water solubility: (20 °C)completely soluble Solubility in other solvents: Alcohol: miscible Esters: miscible Ether: miscible Aromatic hydrocarbons: miscible petroleum ether.: miscible

	petrol: miscible
Partition coefficient: n-octanol/water	log Pow: 0,007
Vapour pressure	0,05 hPa (20 °C)
Density	1,0670 g/cm3 (20 °C)
Relative density	1,069 (20 °C)
Relative vapor density	2,6
Particle characteristics	No data available
Evaporation rate (Butylacetate = 1)	0,027

9.2 Other information

Self-ignition	390 °C (1.013 hPa) Method: EU Test Guideline A15
Surface tension	33,5 mN/m (20 °C)
Molecular weight	132,16 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

- Stable at normal ambient temperature and pressure.

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

- Keep away from open flames, hot surfaces and sources of ignition.

- Avoid high temperatures.
- Avoid excessive heat for prolonged periods of time.

10.5 Incompatible materials

- Strong oxidizing agents
- Strong acids
- On contact with acid releases:
- Acetone

10.6 Hazardous decomposition products

- On combustion or on thermal decomposition (pyrolysis) releases:
- Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11: Toxicological information

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

Acute toxicity

Acute oral toxicity

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	LD50 : 7.000 mg/kg - Rat Not classified as hazardous for acute oral toxicity according to GHS. Published data

Acute inhalation toxicity

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	LC50 - 4 h (aerosol) : > 5,11 mg/l - Rat , male and female Method: OECD Test Guideline 403 Not classified as hazardous for acute inhalation toxicity according to GHS. No mortality observed at this concentration. Unpublished reports

Acute dermal toxicity

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	LD50 : > 2.000 mg/kg - Rat , male and female Method: OECD Test Guideline 402 Not classified as hazardous for acute dermal toxicity according to GHS. Semiocclusive No mortality observed at this dose. Unpublished reports

Acute toxicity (other routes of administration)	No data available

Skin corrosion/irritation

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Rabbit No skin irritation Method: OECD Test Guideline 404 Semiocclusive Unpublished reports

Serious eye damage/eye irritation

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Rabbit Causes serious eye irritation. Method: OECD Test Guideline 405 Unpublished reports

Respiratory or skin sensitisation

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Maximisation Test - Guinea pig Responding animals in GPMT < 30% Method: OECD Test Guideline 406 Unpublished reports

Mutagenicity

Genotoxicity in vitro

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Ames test with and without metabolic activation negative Method: OECD Test Guideline 471 Unpublished reports Gene mutation assays in mammalian cells. Strain: mouse lymphoma cells with and without metabolic activation negative Method: OECD Test Guideline 490 Unpublished reports

Genotoxicity in vivo

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	In vivo micronucleus test - Mouse male Intraperitoneal route Method: OECD Test Guideline 474 negative Unpublished reports

Carcinogenicity No data available

Toxicity for reproduction and development

Toxicity to reproduction/Fertility

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Reproduction/developmental toxicity screening test - Rat, male and female, Oral General Toxicity - Parent NOAEL: 1.000 mg/kg bw/day Fertility NOEL: 1.000 mg/kg bw/day General Toxicity F1 NOEL: 1.000 mg/kg bw/day OECD Test Guideline 422 Gavage, Highest dose tested, no impairment of fertility has been observed, Unpublished reports One-Generation Reproduction Toxicity Study - Rat, male and female, Oral General Toxicity - Parent NOAEL: 1.000 mg/kg bw/day Fertility NOAEL Parent: 1.000 mg/kg bw/day General Toxicity F1 NOAEL: 1.000 mg/kg bw/day Fertility NOAEL F1: 1.000 mg/kg bw/day Developmental Toxicity NOAEL F1: 1.000 mg/kg bw/day General Toxicity F2 NOAEL: 1.000 mg/kg bw/day Developmental Toxicity NOAEL F2: 1.000 mg/kg bw/day OECD Test Guideline 443 Gavage, Highest dose tested, no impairment of fertility has been observed, Unpublished internal reports

Developmental Toxicity/Teratogenicity

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Pre-natal - Rat, male and female, Oral General Toxicity Maternal NOAEL: 1.000 mg/kg bw/day Developmental Toxicity NOAEL F1: 1.000 mg/kg bw/day Method: OECD Test Guideline 414 Gavage, Highest dose tested, no teratogenic effects have been observed, Unpublished reports Pre-natal - Rabbit, female, Oral General Toxicity Maternal NOAEL: 300 mg/kg bw/day Developmental Toxicity NOAEL F1: 1.000 mg/kg bw/day Method: OECD Test Guideline 414 Gavage, Highest dose tested, no teratogenic effects have been observed, Unpublished internal reports

STOT

STOT - single exposure

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	The substance or mixture is not classified as specific target organ toxicant, single exposure. Internal evaluation.

STOT - repeated exposure

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	The substance or mixture is not classified as specific target organ toxicant, repeated exposure. Internal evaluation.
2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Oral 5 Weeks - Rat , male and female NOAEL: 1000 mg/kg Method: OECD Test Guideline 422 Gavage Highest dose tested No systemic toxicity observed. Unpublished reports Inhalation (aerosol) 90-day - Rat , male and female NOAEC: > 5 mg/l Method: OECD Test Guideline 413 Highest dose tested No significant adverse effects were reported Unpublished reports

Aspiration toxicity No data available

11.2 Information on other hazards

Endocrine disrupting properties 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.

Experience with human exposure No data available

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	LC50 - 96 h : 16.700 mg/l - Pimephales promelas (fathead minnow) flow-through test Analytical monitoring: yes Method: according to a standardised method Not harmful to fish (LC/LL50 > 100 mg/L) Published data

Acute toxicity to daphnia and other aquatic invertebrates

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	EC50 - 48 h : > 96 mg/l - Daphnia magna (Water flea) static test Analytical monitoring: yes Method: OECD Test Guideline 202 Not harmful to aquatic invertebrates. (EC/EL50 > 100 mg/L) Highest concentration tested Unpublished reports

EC50 - 48 h : 4.600 mg/l - Daphnia magna (Water flea)
static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
Not harmful to aquatic invertebrates. (EC/EL50 > 100 mg/L)
Unpublished reports

Toxicity to aquatic plants

2,2-dimethyl-1,3-dioxolan-4-ylmethanol

ErC50 - 72 h : > 92 mg/l - Pseudokirchneriella subcapitata (green algae)
static test
Analytical monitoring: yes
End point: Growth rate
Method: OECD Test Guideline 201
Not harmful to algae (EC/EL50 > 100 mg/L)
Highest concentration tested
Unpublished reports

NOEC - 72 h : 92 mg/l - Pseudokirchneriella subcapitata (green algae)
static test
Analytical monitoring: yes
End point: Growth rate
Method: OECD Test Guideline 201
No adverse chronic effect observed up to and including the threshold of 1 mg/L.
Highest concentration tested
Unpublished reports

ErC50 - 72 h : 15.000 mg/l - Raphidocelis subcapitata (freshwater green alga)
static test
End point: Growth rate
Method: OECD Test Guideline 201
Not harmful to algae (EC/EL50 > 100 mg/L)
Unpublished reports

NOEC - 72 h : 940 mg/l - Raphidocelis subcapitata (freshwater green alga)
static test
End point: Growth rate
Method: OECD Test Guideline 201
No adverse chronic effect observed up to and including the threshold of 1 mg/L.
Unpublished reports

Toxicity to microorganisms

2,2-dimethyl-1,3-dioxolan-4-ylmethanol

- 3 h : - activated sludge
static test
End point: Respiration inhibition

EC50 : > 1.000 mg/l

EC10 : > 1.000 mg/l

Analytical monitoring: no
Method: OECD Test Guideline 209
Unpublished reports

Chronic toxicity to fish

No data available

Chronic toxicity to daphnia and other aquatic invertebrates

2,2-dimethyl-1,3-dioxolan-4-ylmethanol

NOEC: 10 mg/l - 21 Days - Daphnia magna (Water flea)
semi-static test
Analytical monitoring: yes
End point: Reproduction
Method: OECD Test Guideline 211
No adverse chronic effect observed up to and including the threshold of 1 mg/L.
Unpublished reports

Terrestrial Compartment

Toxicity to soil dwelling organisms

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	NOEC: 250 mg/kg - 56 Days - Eisenia fetida (earthworms) End point: Reproduction Method: OECD Test Guideline 222 Unpublished reports EC10: 1.250 mg/kg - 28 Days - soil micro-organisms End point: Nitrogen transformation Method: OECD Test Guideline 216 Unpublished reports

12.2 Persistence and degradability

Abiotic degradation

Stability in water

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	DT50: Hydrolysis pH: 4,0 Temperature of hydrolysis: 15 °C Hydrolysis time: 6,59 Days Temperature of hydrolysis: 20 °C Hydrolysis time: 3,51 Days Temperature of hydrolysis: 25 °C Hydrolysis time: 0,959 Days Method: OECD Test Guideline 111 Unpublished reports

Physical- and photo-chemical elimination	No data available

Biodegradation

Biodegradability

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Ready biodegradability study: Method: OECD Test Guideline 301 F 86,2 % - 28 Days The 10 day time window criterion is fulfilled. The substance fulfills the criteria for ultimate aerobic biodegradability and ready biodegradability Theoretical oxygen demand Inoculum: activated sludge Unpublished internal reports

Degradability assessment

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	The product is considered to be rapidly degradable in the environment

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.
Bioconcentration factor (BCF)	No data available

12.4 Mobility in soil

Adsorption potential (Koc)

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Adsorption/Soil Log Koc: < 1,25 Method: OECD Test Guideline 121 Highly mobile in soils Unpublished reports
Known distribution to environmental compartments	No data available

12.5 Results of PBT and vPvB assessment

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Substance is not persistent, bioaccumulative, and toxic (PBT). Substance is not very persistent and very bioaccumulative (vPvB).

12.6 Endocrine disrupting properties

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

Ecotoxicity assessment

Short-term (acute) aquatic hazard

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	Not harmful to aquatic life (LC/LL50, EC/EL50 > 100 mg/L)

Long-term (chronic) aquatic hazard

2,2-dimethyl-1,3-dioxolan-4-ylmethanol	No adverse chronic effect observed up to and including the threshold of 1 mg/L.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

Prohibition

- Do not discharge directly into the environment.
- Dispose of in accordance with local regulations.
- The Company encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, The Company recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

Advice on cleaning and disposal of packaging

Prohibition

- Do NOT dispose of untreated packaging with industrial waste.
- Do not dispose of with domestic refuse.
- Empty remaining contents.
- Clean using steam.
- Monitor the residual vapours.
- Dispose of rinse water in accordance with local and national regulations.
- Containers that cannot be cleaned must be treated as waste.
- Dispose of contents/ container to an approved waste disposal plant.
- Dispose of in accordance with local regulations.
- Where possible recycling is preferred to disposal or incineration.
- The recycled material must be completely dry and free of pollutants.

SECTION 14: Transport information

ADN/ADNR
not regulated

ADR
not regulated

RID
not regulated

IMDG
not regulated

IATA
not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

Requirements of Annex XVII to Regulation (EC) 1907/2006 apply to this product. The precise list of restricted uses is available in the corresponding entry of this annex.
Number on list: 3

Shall not be used in: - ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, - tricks and jokes, - games for one or more participants, or any article intended to be used as such, even with ornamental aspects.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

acetone
Requirements of Annex XVII to Regulation (EC) 1907/2006 apply to this product. The precise list of restricted uses is available in the corresponding entry of this annex.
Number on list: 75

*Extract of entry 75: Shall not be placed on the market in mixtures for use for tattooing purposes, and mixtures containing any such substances shall not be used for tattooing purposes, after 4 January 2022.

Notification status

Inventory Information	Status
United States TSCA Inventory	- All substances listed as active on the TSCA inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
Australian Inventory of Industrial Chemicals (AIIC)	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory

Taiwan Chemical Substance Inventory (TCSI)	- Listed on Inventory
New Zealand. Inventory of Chemical Substances	- All components are listed on the NZIoC inventory. Additional HSNO obligations may apply. Please refer to Section 15 of SDS for New Zealand.
EU. European Registration, Evaluation, Authorization and Restriction of Chemical (REACH)	- When purchased from a Solvay legal entity based in the EEA (""European" "Economic Area""), this product is compliant with the registration" provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, and/or registered. When purchased from a legal entity outside of the EEA, please contact your local representative for additional information.
Korea. Act on Registration and Evaluation of Chemicals	- When purchased from a Solvay legal entity based in Korea, this product is compliant with "Act on Registration and Evaluation of Chemicals" (AREC or K-REACH, Article 10) as all its components are either excluded, exempt, and/or (pre)registered. When purchased from a legal entity outside of Korea, please contact your local representative for additional information.

15.2 Chemical safety assessment

- A Chemical Safety Assessment has been carried out for this substance.
- Exposure Scenario prepared in accordance with the latest ESCOM format.
- See Exposure scenario

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

- H319: Causes serious eye irritation.

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

- ADR: European Agreement on International Carriage of Dangerous Goods by Road.
- ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.
- RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
- IATA: International Air Transport Association.
- ICAO-TI: Technical Instructions for Safe Transport of Dangerous Goods by Air.
- IMDG: International Maritime Dangerous Goods.
- TWA: Time weighted average
- ATE: Estimated value of acute toxicity
- EC: European Community number
- CAS: Chemical Abstracts Service.
- LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).
- LC50: Substance concentration causing 50% (half) death in the test animals group.
- EC50: Effective Concentration of the substance causing the maximum of 50%.
- PBT: Persistent, Bioaccumulative and Toxic substance.
- vPvB: Very Persistent and Very Bioaccumulative.
- GHS/CLP/SEA: Classification, labeling, packaging regulation
- DNEL: Derived No Effect Level

- PNEC: Predicted No Effect Concentration
- STOT: Specific Target Organ Toxicity

Not all acronyms listed above are referenced in this SDS.

Further information

- Distribute new edition to clients
- Update
- Exposure scenario

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).
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. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

Annex: Exposure Scenarios

Table of Contents

ES 1: Consumer use

1.1. Title section

Exposure Scenario name	:	Consumer use, Use into insect repellent products
Structured Short Title	:	Consumer use

Environment		
CS 1	**End use of insect repellent products**	ERC8a
Consumer		
CS 2	**Use of biocidal products (insect repellent), Electric room diffuser, Indoor**	PC8,,
CS 3	**Use of biocidal products (insect repellent), Electric diffuser, Outdoor**	PC8,,, OC9

1.2. Conditions of use affecting exposure

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

1.2.2. Control of consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8) / Use of biocidal products (insect repellent) () / Electric room diffuser ()

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 50 g/event
Exposure frequency	:	1 events/day
Duration	:	Exposure duration 8 h
Use frequency	:	Frequent
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.		
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

1.2.3. Control of consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8) / Use of biocidal products (insect repellent) () / Electric diffuser () / Outdoor (OC9)

Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Other conditions affecting consumers exposure
Indoor or outdoor use : Outdoor use

1.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

1.3.2. Consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8) / Use of biocidal products (insect repellent) () / Electric room diffuser ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
Eye	local		(Risk management measures are based on qualitative risk characterisation.)	

1.3.3. Consumer exposure: Biocidal products (e.g. Disinfectants, pest control) (PC8) / Use of biocidal products (insect repellent) () / Electric diffuser () / Outdoor (OC9)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,057 mg/m³ (AISE REACT)	< 0,01
dermal	systemic	long-term	0 mg/kg bw/day (AISE REACT)	< 0,01
combined routes	systemic	long-term		< 0,01

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency

- dilution factor
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 2: Consumer use

2.1. Title section

Exposure Scenario name	:	Consumer use, Use in paint
Structured Short Title	:	Consumer use

Environment		
CS 1	**Consumer use**	ERC8a, Consumer use
Consumer		
CS 2	**All application phases regarding water borne paint**	PC9a,
CS 3	**All application phases regarding coatings**	PC9a,

2.2. Conditions of use affecting exposure

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

2.2.2. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / All application phases regarding water borne paint ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 3750 g/event
Exposure frequency	:	1 events/day
Use frequency	:	Infrequent
Duration	:	Application duration <= 120 min
Duration	:	Dermal exposure duration per event <= 120 min
Duration	:	Inhalation exposure duration per event <= 132 min
Other conditions affecting consumers exposure		
Room size	:	>= 20 m3
Ventilation rate	:	>= 0,6

2.2.3. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / All application phases regarding coatings ()

Product (article) characteristics
Covers concentrations up to 4 %

Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 1650 g/event
Exposure frequency	:	1 events/day
Use frequency	:	Infrequent
Duration	:	Application duration <= 60 min
Duration	:	Inhalation exposure duration per event <= 60 min
Other conditions affecting consumers exposure		
Room size	:	>= 34 m3
Ventilation rate	:	>= 1,5

2.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

2.3.2. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / All application phases regarding water borne paint ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0033 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
inhalative	systemic	long-term	0,0053 mg/m³ (ConsExpo web 1.1.0)	< 0,01
combined routes	systemic	long-term		< 0,01

2.3.3. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / All application phases regarding coatings ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,000154 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
inhalative	systemic	long-term	0,009 mg/m³ (ConsExpo web 1.1.0)	< 0,01

combined routes	systemic	long-term		< 0,01

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 3: Formulation or re-packing

3.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Industrial formulation of homecare products
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Industrial formulation of homecare products**	ERC2, Industrial formulation of homecare products
Worker		
CS 2	**General process exposures, no sampling**	PROC1,, CS57
CS 3	**General process exposures, With sample collection**	PROC2,, CS56
CS 4	**General process exposures**	PROC3,
CS 5	**General exposures open batch process including aerosols**	PROC4,
CS 6	**Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture)**	PROC3,
CS 7	**Sample collection**	PROC3,
CS 8	**Laboratory activities**	PROC15, CS36
CS 9	**Bulk transfers, Drum/batch transfers**	PROC8b, CS14, CS8
CS 10	**Mixing operations (open systems)**	PROC5, CS30
CS 11	**Transfer from/pouring from containers, Manual**	PROC8a, CS22, CS34
CS 12	**Tabletting, compression, extrusion or pelletisation**	PROC14
CS 13	**Drum and small package filling**	PROC9, CS6
CS 14	**Clean down and Maintenance**	PROC8a,
CS 15	**Storage**	PROC1,
CS 16	**Storage**	PROC2,

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Industrial formulation of homecare products

3.2.2. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1) / General process exposures () / no sampling (CS57)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Use in closed process, no likelihood of exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 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) / General process exposures () / with sample collection (CS56)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Closed continuous process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.4. 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) / General process exposures ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Closed batch process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4) / General exposures open batch process including aerosols ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.6. 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) / Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture) ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		

Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %
Closed batch process with occasional controlled exposure
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.7. 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) / Sample collection ()

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure

Use frequency	:	Duration of the activity <= 15 min/day

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
without local exhaust ventilation
Closed batch process with occasional controlled exposure
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.8. Control of worker exposure: Use as laboratory reagent (PROC15) / Laboratory activities (CS36)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Bulk transfers (CS14) / Drum/batch transfers (CS8)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day

Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 95 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.10. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) (CS30)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid Aerosol
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		

Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.11. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer from/pouring from containers (CS22) / Manual (CS34)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.13. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Drum and small package filling (CS6)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.14. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Clean down and Maintenance ()

Product (article) characteristics		
Covers concentrations up to 3 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

3.2.15. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1) / Storage ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Use in closed process, no likelihood of exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Closed continuous process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		

For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Industrial formulation of homecare products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

3.3.2. Worker exposure: Use in closed process, no likelihood of exposure (PROC1) / General process exposures () / no sampling (CS57)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,011 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (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) / General process exposures () / with sample collection (CS56)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,046

3.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / General process exposures ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³	0,055

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,138 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,069

3.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4) / General exposures open batch process including aerosols ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,372 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

3.3.6. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,33 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,075

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,138 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,041

3.3.8. Worker exposure: Use as laboratory reagent (PROC15) / Laboratory activities (CS36)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,068 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,016

3.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Bulk transfers (CS14) / Drum/batch transfers (CS8)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,279

3.3.10. Worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) (CS30)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,32

3.3.11. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer from/pouring from containers (CS22) / Manual (CS34)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,293

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,114

3.3.13. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Drum and small package filling (CS6)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	1,372 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,183

3.3.14. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Clean down and Maintenance ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	6,608 mg/m³ (ECETOC TRA worker v3)	0,11
dermal	systemic	long-term	0,548 mg/kg bw/day (ECETOC TRA worker v3)	0,055
combined routes	systemic	long-term		0,165

3.3.15. Worker exposure: Use in closed process, no likelihood of exposure (PROC1) / Storage ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,00385 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,385 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,37 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,143

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 4: Widespread use by professional workers

4.1. Title section

Exposure Scenario name	:	Widespread use by professional workers, Professional uses as polishes and wax blends
Structured Short Title	:	Widespread use by professional workers

Environment		
CS 1	**Polishes and wax blends**	ERC8a, PC31
Worker		
CS 2	**Floor care products; polish/impregnating agent**	PROC10,
CS 3	**Floor care products; polish/impregnating agent**	PROC11,
CS 4	**Maintenance products; furniture and leather care products**	PROC10,
CS 5	**Maintenance products; furniture and leather care products**	PROC11,
CS 6	**Maintenance products; leather care product/ Preparatory phase**	PROC8a,
CS 7	**Maintenance products; leather care product/ Use phase**	PROC2,
CS 8	**Maintenance products; drain unblocker**	PROC8a,
CS 9	**Maintenance products; stainless steel care**	PROC10,
CS 10	**Maintenance products; stainless steel care; spray and wipe**	PROC11,

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) / Polishes and wax blends (PC31)

4.2.2. Control of worker exposure: Roller application or brushing (PROC10) / Floor care products; polish/impregnating agent ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.3. Control of worker exposure: Non-industrial spraying (PROC11) / Floor care products; polish/impregnating agent ()

Product (article) characteristics		
Covers concentrations up to 3 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.4. Control of worker exposure: Roller application or brushing (PROC10) / Maintenance products; furniture and leather care products ()

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 4 hours/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.5. Control of worker exposure: Non-industrial spraying (PROC11) / Maintenance products; furniture and leather care products ()

Product (article) characteristics		
Covers concentrations up to 4 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		

For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Maintenance products; leather care product/ Preparatory phase ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.7. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Maintenance products; leather care product/ Use phase ()

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

Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Closed continuous process with occasional controlled exposure		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Maintenance products; drain unblocker ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		

Wear suitable respiratory protection. Inhalation - minimum efficiency of >= 90 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.9. Control of worker exposure: Roller application or brushing (PROC10) / Maintenance products; stainless steel care ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 4 hours/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

4.2.10. Control of worker exposure: Non-industrial spraying (PROC11) / Maintenance products; stainless steel care; spray and wipe ()

Product (article) characteristics		
Covers concentrations up to 4 %		
Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 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) / Polishes and wax blends (PC31)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

4.3.2. Worker exposure: Roller application or brushing (PROC10) / Floor care products; polish/impregnating agent ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,504

4.3.3. Worker exposure: Non-industrial spraying (PROC11) / Floor care products; polish/impregnating agent ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR

inhalative	systemic	long-term	11,01 mg/m³ (ECETOC TRA worker v3)	0,184
dermal	systemic	long-term	0,22 mg/kg bw/day (RISKOFDERM v2.1)	0,022
combined routes	systemic	long-term		0,206

4.3.4. Worker exposure: Roller application or brushing (PROC10) / Maintenance products; furniture and leather care products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	8,26 mg/m³ (ECETOC TRA worker v3)	0,138
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,412

4.3.5. Worker exposure: Non-industrial spraying (PROC11) / Maintenance products; furniture and leather care products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	11,01 mg/m³ (ECETOC TRA worker v3)	0,184
dermal	systemic	long-term	0,631 mg/kg bw/day (RISKOFDERM v2.1)	0,063
combined routes	systemic	long-term		0,247

4.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Maintenance products; leather care product/ Preparatory phase ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,377 mg/m³ (ECETOC TRA worker v3)	0,023
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,16

4.3.7. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Maintenance products; leather care product/ Use phase ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,018

4.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Maintenance products; drain unblocker ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,138 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,03

4.3.9. Worker exposure: Roller application or brushing (PROC10) / Maintenance products; stainless steel care ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	8,26 mg/m³ (ECETOC TRA worker v3)	0,138
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,412

4.3.10. Worker exposure: Non-industrial spraying (PROC11) / Maintenance products; stainless steel care; spray and wipe ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	11,01 mg/m³ (ECETOC TRA worker v3)	0,184
dermal	systemic	long-term	0,631 mg/kg bw/day	0,063

			(RISKOFDERM v2.1)	
combined routes	systemic	long-term		0,247

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 5: Widespread use by professional workers

5.1. Title section

Exposure Scenario name	:	Widespread use by professional workers, Professional end-use of washing and cleaning products (IFRA GES 4)
Structured Short Title	:	Widespread use by professional workers

Environment		
CS 1	**End-use of washing and cleaning products**	ERC8d, ERC8a, End-use of washing and cleaning products
Worker		
CS 2	**Kitchen cleaners (Use phase)**	PROC10,

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, outdoor) (ERC8d) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / End-use of washing and cleaning products

5.2.2. Control of worker exposure: Roller application or brushing (PROC10) / Kitchen cleaners (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 3 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Scale of application for spreading of liquid to surface	:	> 3 m2/h
Use frequency	:	Duration of the activity <= 4 hours/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		

Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	Any size workroom
Temperature	:	Assumes process temperature up to 25 °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, outdoor) (ERC8d) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / End-use of washing and cleaning products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

5.3.2. Worker exposure: Roller application or brushing (PROC10) / Kitchen cleaners (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,5 mg/m³ (ART v1.5)	0,058
dermal	systemic	long-term	1,097 mg/kg bw/day (ECETOC TRA worker v3)	0,11
combined routes	systemic	long-term		0,168

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 6: Consumer use

6.1. Title section

Exposure Scenario name	:	Consumer use, Consumers end-use of washing and cleaning products (IFRA GES 6)
Structured Short Title	:	Consumer use

Environment		
CS 1	**End-use of washing and cleaning products**	ERC8d, ERC8a, End-use of washing and cleaning products
Consumer		
CS 2	**Laundry and dish washing products**	PC35, PC35_1, PC8_1
CS 3	**Surface cleaners (liquid)**	PC35,
CS 4	**Toilet cleaners (liquid)**	PC35,
CS 5	**Carpet cleaning (liquids)**	PC35,
CS 6	**Wipes**	PC35,
CS 7	**High pressure washers/cleaners**	PC35, AISE-SP-C0021
CS 8	**Automotive Care Products**	PC35, PC6
CS 9	**Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)**	PC35, PC8_3, PC35_3
CS 10	**Surface care, trigger sprays**	PC35,
CS 11	**Kitchen cleaner, Liquids**	PC35,, PC16_1, PC17_1, PC24_1, 36
CS 12	**Kitchen cleaner, Sprays**	PC35,, PC24_3

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) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / End-use of washing and cleaning products

6.2.2. Control of consumer exposure: Washing and cleaning products (PC35) / Laundry and dish washing products (PC35_1, PC8_1)

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 50 g/event
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 1 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.3. Control of consumer exposure: Washing and cleaning products (PC35) / Surface cleaners (liquid) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount used per event	:	<= 60 g
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 0,33 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.4. Control of consumer exposure: Washing and cleaning products (PC35) / Toilet cleaners (liquid) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 55 g/event
Exposure frequency	:	1 events/day
Duration	:	Inhalation exposure duration per event <= 7 min
Duration	:	Dermal exposure duration per event <= 2 min
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	>= 2,5 m3

Ventilation rate	:	>= 2

6.2.5. Control of consumer exposure: Washing and cleaning products (PC35) / Carpet cleaning (liquids) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 687,5 g/event
Exposure frequency	:	1 events/day
Product amount ingested	:	<= 0,00184 g/event
Duration	:	Application duration <= 30 min
Duration	:	Inhalation exposure duration per event <= 240 min
Duration	:	Dermal exposure duration per event <= 60 min
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	>= 58 m3
Ventilation rate	:	>= 0,5

6.2.6. Control of consumer exposure: Washing and cleaning products (PC35) / Wipes ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent

6.2.7. Control of consumer exposure: Washing and cleaning products (PC35) / High pressure washers/cleaners (AISE-SP-C0021)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 50 g/event

Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events <= 5 h
Use frequency	:	Infrequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.8. Control of consumer exposure: Washing and cleaning products (PC35) / Automotive Care Products (PC6)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 5,769 g/event
Exposure frequency	:	1 events/day
Product amount in contact to skin	:	<= 0,286 g/event
Duration	:	Application duration <= 20 min
Duration	:	Inhalation exposure duration per event <= 60 min
Use frequency	:	Infrequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	>= 15 m3
Ventilation rate	:	>= 2,5

6.2.9. Control of consumer exposure: Washing and cleaning products (PC35) / Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) (PC8_3, PC35_3)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 35 g/event
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 4 h
Use frequency	:	Frequent

Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.10. Control of consumer exposure: Washing and cleaning products (PC35) / Surface care, trigger sprays ()

Product (article) characteristics		
Covers the percentage of the substance in the product up to 0,998 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 35 g/event
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 4 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.11. Control of consumer exposure: Washing and cleaning products (PC35) / Kitchen cleaner () / Liquids (PC16_1, PC17_1, PC24_1, 36)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 60 g/event
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 0,33 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

6.2.12. Control of consumer exposure: Washing and cleaning products (PC35) / Kitchen cleaner () / Sprays (PC24_3)

Product (article) characteristics
Covers concentrations up to 0,5 %

Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 35 g/event
Exposure frequency	:	1 events/day
Duration	:	Duration of exposure by events 4 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

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) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / End-use of washing and cleaning products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

6.3.2. Consumer exposure: Washing and cleaning products (PC35) / Laundry and dish washing products (PC35_1, PC8_1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,384 mg/m³ (AISE REACT)	0,026
dermal	systemic	long-term	0,763 mg/kg bw/day (AISE REACT)	0,153
combined routes	systemic	long-term		0,178

6.3.3. Consumer exposure: Washing and cleaning products (PC35) / Surface cleaners (liquid) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,028 mg/m³ (AISE REACT)	< 0,01
dermal	systemic	long-term	1,43 mg/kg bw/day (AISE REACT)	0,286
combined routes	systemic	long-term		0,288

6.3.4. Consumer exposure: Washing and cleaning products (PC35) / Toilet cleaners (liquid) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR

inhalative	systemic	long-term	0,00011 mg/m³ (ConsExpo web 1.1.0)	< 0,01
dermal	systemic	long-term	0,027 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
combined routes	systemic	long-term		< 0,01

6.3.5. Consumer exposure: Washing and cleaning products (PC35) / Carpet cleaning (liquids) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,0029 mg/m³ (ConsExpo web 1.1.0)	< 0,01
dermal	systemic	long-term	0,295 mg/kg bw/day (ConsExpo web 1.1.0)	0,059
oral	systemic	long-term	0,033 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
combined routes	systemic	long-term		0,066

6.3.6. Consumer exposure: Washing and cleaning products (PC35) / Wipes ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1,43 mg/kg bw/day (AISE REACT)	0,286

6.3.7. Consumer exposure: Washing and cleaning products (PC35) / High pressure washers/cleaners (AISE-SP-C0021)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	6,25 mg/m³ (ECETOC TRA consumer v3)	0,417
dermal	systemic	long-term	1,429 mg/kg bw/day (ECETOC TRA consumer v3)	0,286
combined routes	systemic	long-term		0,702

6.3.8. Consumer exposure: Washing and cleaning products (PC35) / Automotive Care Products (PC6)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,000024 mg/m³ (ConsExpo web	< 0,01

			1.1.0)	
dermal	systemic	long-term	0,00164 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
combined routes	systemic	long-term		< 0,01

6.3.9. Consumer exposure: Washing and cleaning products (PC35) / Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) (PC8_3, PC35_3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,147 mg/m³ (ECETOC TRA consumer v3)	0,343
dermal	systemic	long-term	1,429 mg/kg bw/day (ECETOC TRA consumer v3)	0,286
combined routes	systemic	long-term		0,629

6.3.10. Consumer exposure: Washing and cleaning products (PC35) / Surface care, trigger sprays ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,137 mg/m³ (ECETOC TRA consumer v3)	0,342
dermal	systemic	long-term	1,426 mg/kg bw/day (ECETOC TRA consumer v3)	0,285
combined routes	systemic	long-term		0,628

6.3.11. Consumer exposure: Washing and cleaning products (PC35) / Kitchen cleaner () / Liquids (PC16_1, PC17_1, PC24_1, 36)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,028 mg/m³ (AISE REACT)	< 0,01
dermal	systemic	long-term	1,43 mg/kg bw/day (AISE REACT)	0,286
combined routes	systemic	long-term		0,288

6.3.12. Consumer exposure: Washing and cleaning products (PC35) / Kitchen cleaner () / Sprays (PC24_3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,574 mg/m³ (ECETOC TRA	0,172

			consumer v3)	
dermal	systemic	long-term	0,715 mg/kg bw/day (ECETOC TRA consumer v3)	0,143
combined routes	systemic	long-term		0,314

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 7: Consumer use

7.1. Title section

Exposure Scenario name	:	Consumer use, Consumer end-use of air care products (IFRA GES 7)
Structured Short Title	:	Consumer use

Environment		
CS 1	**End use of air care products**	ERC8a, End use of air care products
Consumer		
CS 2	**Air fresheners aerosols (aqueous, non-aqueous, concentrated (mini-aerosol) Timed-release aerosols) for consumer use**	PC3_1,
CS 3	**Static room diffuser with rattan sticks**	PC3,
CS 4	**Candles**	PC3_2,
CS 5	**Electric room diffuser**	PC3_2,

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) / End use of air care products

7.2.2. Control of consumer exposure: Air care, instant action (aerosol sprays) (PC3_1) / Air fresheners aerosols (aqueous, non-aqueous, concentrated (mini-aerosol) Timed-release aerosols) for consumer use ()

Product (article) characteristics		
Covers concentrations up to 0,25 %		
Physical form of product	:	Aerosol Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 10 g/event
Exposure frequency	:	4 events/day
Duration	:	Duration of exposure by events 15 min
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

7.2.3. Control of consumer exposure: Air care products (PC3) / Static room diffuser with rattan sticks ()

Product (article) characteristics		
Covers concentrations up to 89,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 367 g/event
Exposure frequency	:	1 events/day
Product amount in contact to skin	:	<= 0,6 g/event
Duration	:	Application duration <= 90,3 d
Duration	:	Inhalation exposure duration per event <= 90,3 d
Use frequency	:	Infrequent
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to fingertips.
Indoor or outdoor use	:	Indoor use
Room size	:	>= 20 m3
Ventilation rate	:	>= 0,6

7.2.4. Control of consumer exposure: Air care, continuous action (solid and liquid) (PC3_2) / Candles ()

Product (article) characteristics		
Covers concentrations up to 9,98 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 50 g/event
Exposure frequency	:	1 events/day
Duration	:	Exposure duration 8 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

7.2.5. Control of consumer exposure: Air care, continuous action (solid and liquid) (PC3_2) / Electric room diffuser ()

Product (article) characteristics		
Covers concentrations up to 49,9 %		
Physical form of product	:	No spray

Amount used (or contained in articles), frequency and duration of use/exposure		
Amount per Application	:	<= 50 g/event
Exposure frequency	:	1 events/day
Duration	:	Exposure duration 8 h
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

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) / End use of air care products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

7.3.2. Consumer exposure: Air care, instant action (aerosol sprays) (PC3_1) / Air fresheners aerosols (aqueous, non-aqueous, concentrated (mini-aerosol) Timed-release aerosols) for consumer use ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	4,348 mg/m³ (ECETOC TRA consumer v3)	0,29

7.3.3. Consumer exposure: Air care products (PC3) / Static room diffuser with rattan sticks ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,4 mg/m³ (ConsExpo web 1.1.0)	0,093
dermal	systemic	long-term	0,296 mg/kg bw/day (ConsExpo web 1.1.0)	0,059
oral	systemic	long-term	0,014 mg/kg bw/day (ConsExpo web 1.1.0)	< 0,01
combined routes	systemic	long-term		0,155

7.3.4. Consumer exposure: Air care, continuous action (solid and liquid) (PC3_2) / Candles ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,011 mg/m³ (AISE	< 0,01

			REACT)	
dermal	systemic	long-term	0,059 mg/kg bw/day (ECETOC TRA consumer v3)	0,012
combined routes	systemic	long-term		0,013

7.3.5. Consumer exposure: Air care, continuous action (solid and liquid) (PC3_2) / Electric room diffuser ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,057 mg/m³ (AISE REACT)	< 0,01
dermal	systemic	long-term	0,297 mg/kg bw/day (ECETOC TRA consumer v3)	0,059
combined routes	systemic	long-term		0,063

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 8: Formulation or re-packing

8.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Industrial formulation of personal care products
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Industrial formulation of personal care products**	ERC2, Industrial formulation of personal care products
Worker		
CS 2	**General process exposures, no sampling**	PROC1,, CS57
CS 3	**General process exposures, With sample collection**	PROC2,, CS56
CS 4	**General process exposures**	PROC3,
CS 5	**General exposures open batch process including aerosols**	PROC4,
CS 6	**Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture)**	PROC3,
CS 7	**Sample collection**	PROC3,
CS 8	**Laboratory activities**	PROC15, CS36
CS 9	**Bulk transfers, Drum/batch transfers**	PROC8b, CS14, CS8
CS 10	**Mixing operations (open systems)**	PROC5, CS30
CS 11	**Transfer from/pouring from containers, Manual**	PROC8a, CS22, CS34
CS 12	**Tabletting, compression, extrusion or pelletisation**	PROC14
CS 13	**Drum and small package filling**	PROC9, CS6
CS 14	**Clean down and Maintenance**	PROC8a,
CS 15	**Storage**	PROC1,
CS 16	**Storage**	PROC2,

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Industrial formulation of personal care products

8.2.2. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1) / General process exposures () / no sampling (CS57)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Use in closed process, no likelihood of exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / General process exposures () / with sample collection (CS56)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Closed continuous process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.4. 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) / General process exposures ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Closed batch process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4) / General exposures open batch process including aerosols ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.6. 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) / Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture) ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		

Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %
Closed batch process with occasional controlled exposure
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.7. 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) / Sample collection ()

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure

Use frequency	:	Duration of the activity <= 15 min/day

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
without local exhaust ventilation
Closed batch process with occasional controlled exposure
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.8. Control of worker exposure: Use as laboratory reagent (PROC15) / Laboratory activities (CS36)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Bulk transfers (CS14) / Drum/batch transfers (CS8)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation Inhalation - minimum efficiency of >= 95 %
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.10. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) (CS30)

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

Physical form of product	:	Liquid Aerosol

Amount used (or contained in articles), frequency and duration of use/exposure

Duration	:	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands.
Avoid splashing.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %
Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)

Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.11. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer from/pouring from containers (CS22) / Manual (CS34)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.13. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Drum and small package filling (CS6)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Local exhaust ventilation Inhalation - minimum efficiency of >= 90 %		
Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.14. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Clean down and Maintenance ()

Product (article) characteristics		
Covers concentrations up to 0,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
without local exhaust ventilation		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

8.2.15. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1) / Storage ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Use in closed process, no likelihood of exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity <= 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands.		
Avoid splashing.		
Closed continuous process with occasional controlled exposure		
Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		

For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Industrial formulation of personal care products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

8.3.2. Worker exposure: Use in closed process, no likelihood of exposure (PROC1) / General process exposures () / no sampling (CS57)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,011 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

8.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / General process exposures () / with sample collection (CS56)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,046

8.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / General process exposures ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³	0,055

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,138 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,069

8.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4) / General exposures open batch process including aerosols ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,372 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

8.3.6. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Batch processes at elevated temperatures (e.g. solvents resin manufacture, grease manufacture) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,33 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,075

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,138 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,041

8.3.8. Worker exposure: Use as laboratory reagent (PROC15) / Laboratory activities (CS36)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,068 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,016

8.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Bulk transfers (CS14) / Drum/batch transfers (CS8)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,279

8.3.10. Worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) (CS30)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,32

8.3.11. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer from/pouring from containers (CS22) / Manual (CS34)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,293

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,114

8.3.13. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Drum and small package filling (CS6)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	1,372 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,183

8.3.14. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Clean down and Maintenance ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,082

8.3.15. Worker exposure: Use in closed process, no likelihood of exposure (PROC1) / Storage ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,00385 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,385 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,37 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,143

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 9: Formulation or re-packing

9.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Industrial formulation of personal care end-products
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Industrial formulation end-products**	ERC2, Industrial formulation end-products
Worker		
CS 2	**Uploading/unloading**	PROC8b,
CS 3	**Sampling of received goods**	PROC2,
CS 4	**Quality control of received goods**	PROC15,
CS 5	**Storage**	PROC1,
CS 6	**Closed system mixing including filling process equipment**	PROC3,
CS 7	**Batch mixing with significant contact including filling process**	PROC5,
CS 8	**Maintenance and cleaning**	PROC8a,
CS 9	**Sampling of compounds**	PROC2,
CS 10	**Quality control of compounds**	PROC15,
CS 11	**Charging/discharging from/to vessels/large**	PROC8b,
CS 12	**Transfer in a small containers**	PROC9,
CS 13	**Production of preparations or articles by tabletting, compression, extrusion, pelletisation**	PROC14

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Industrial formulation end-products

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

Product (article) characteristics		
Covers concentrations up to 0,4 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day

Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.2.4. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Use in closed process, no likelihood of exposure Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.2.6. 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) / Closed system mixing including filling process equipment ()

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced. Closed batch process with occasional controlled exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.2.7. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Product (article) characteristics		
Covers concentrations up to 0,4 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		

Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use
Temperature : Assumes process temperature up to 40 °C

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

Product (article) characteristics
Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : Duration of the activity 4 h/day
Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use
Temperature : Assumes process temperature up to 40 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.2.10. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

Temperature	:	Assumes process temperature up to 40 °C

9.2.11. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.2.13. Control of worker exposure: Production of preparations or articles by tabletting, compression, extrusion, pelletisation (PROC14)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Industrial formulation end-products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

9.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,33 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,822 mg/kg bw/day (ECETOC TRA worker v3)	0,082
combined routes	systemic	long-term		0,088

9.3.4. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,204 mg/kg bw/day (ECETOC TRA worker v3)	0,02
combined routes	systemic	long-term		0,048

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,00661 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,02 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

9.3.6. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Closed system mixing including filling process equipment ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,947 mg/m³ (ECETOC TRA worker v3)	0,099
dermal	systemic	long-term	0,414 mg/kg bw/day (ECETOC TRA worker v3)	0,041
combined routes	systemic	long-term		0,141

9.3.7. Worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,192

9.3.9. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,055 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg	0,014

			bw/day (ECETOC TRA worker v3)	
combined routes	systemic	long-term		0,015

9.3.10. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

9.3.11. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term	(ECETOC TRA worker v3)	0,078

9.3.13. Worker exposure: Production of preparations or articles by tabletting, compression, extrusion, pelletisation (PROC14)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³	0,046

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,343 mg/kg bw/day (ECETOC TRA worker v3)	0,034
combined routes	systemic	long-term		0,08

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 10: Consumer use

10.1. Title section

Exposure Scenario name	:	Consumer use, End use of cosmetic products
Structured Short Title	:	Consumer use

Environment		
CS 1	**End use of cosmetic products**	ERC8a, End use of cosmetic products
Consumer		
CS 2	**End use of cosmetic products**	PC39,
CS 3	**End use of cosmetic products**	PC28,

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) / End use of cosmetic products

10.2.2. Control of consumer exposure: Cosmetics, personal care products (PC39) / End use of cosmetic products ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

10.2.3. Control of consumer exposure: Perfumes, fragrances (PC28) / End use of cosmetic products ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent

Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

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) / End use of cosmetic products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

10.3.2. Consumer exposure: Cosmetics, personal care products (PC39) / End use of cosmetic products ()

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

10.3.3. Consumer exposure: Perfumes, fragrances (PC28) / End use of cosmetic products ()

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 11: Formulation or re-packing

11.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Industrial formulation of cosmetics compounds
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Formulation**	ERC2, SU 10
Worker		
CS 2	**Uploading/unloading**	PROC8b,
CS 3	**Sampling of received goods**	PROC2,
CS 4	**Quality control of received goods**	PROC15,
CS 5	**Storage**	PROC1,
CS 6	**Closed system mixing including filling process equipment**	PROC3,
CS 7	**Batch mixing with significant contact including filling process**	PROC5,
CS 8	**Maintenance and cleaning**	PROC8a,
CS 9	**Sampling of compounds**	PROC2,
CS 10	**Quality control of compounds**	PROC15,
CS 11	**Charging/discharging from/to vessels/large**	PROC8b,
CS 12	**Transfer in a small containers**	PROC9,

11.2. Conditions of use affecting exposure

11.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Formulation (SU 10)

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

Product (article) characteristics		
Covers concentrations up to 0,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.2.4. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

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

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Use in closed process, no likelihood of exposure Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.2.6. 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) / Closed system mixing including filling process equipment ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced. Closed batch process with occasional controlled exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.2.7. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Product (article) characteristics		
Covers concentrations up to 0,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		

General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers concentrations up to 0,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		

Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.2.10. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.2.11. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Product (article) characteristics		
Covers concentrations up to 0,8 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

11.3. Exposure estimation and reference to its source

11.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Formulation (SU 10)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

11.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,37 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

11.3.4. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,34 mg/kg bw/day (ECETOC TRA	0,034

			worker v3)	
combined routes	systemic	long-term		0,08

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,011 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

11.3.6. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Closed system mixing including filling process equipment ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	9,912 mg/m³ (ECETOC TRA worker v3)	0,165
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,234

11.3.7. Worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³	0,055

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,192

11.3.9. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,33 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,822 mg/kg bw/day (ECETOC TRA worker v3)	0,082
combined routes	systemic	long-term		0,088

11.3.10. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,625 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,204 mg/kg bw/day (ECETOC TRA worker v3)	0,02
combined routes	systemic	long-term		0,048

11.3.11. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	4,116 mg/kg bw/day (ECETOC TRA worker v3)	0,412
combined routes	systemic	long-term		0,467

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 12: Formulation or re-packing

12.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Industrial, Formulation of fragranced end-products (IFRA GES 2)
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Industrial formulation end-products**	ERC2, Industrial formulation end-products
Worker		
CS 2	**Uploading/unloading**	PROC8b,
CS 3	**Sampling of received goods**	PROC2,
CS 4	**Quality control of received goods**	PROC15,
CS 5	**Storage**	PROC1,
CS 6	**Closed system mixing including filling process equipment**	PROC3,
CS 7	**Batch mixing with significant contact including filling process**	PROC5,
CS 8	**Maintenance and cleaning**	PROC8a,
CS 9	**Sampling of compounds**	PROC2,
CS 10	**Quality control of compounds**	PROC15,
CS 11	**Charging/discharging from/to vessels/large**	PROC8b,
CS 12	**Transfer in a small containers**	PROC9,
CS 13	**Production of preparations or articles by tabletting, compression, extrusion, pelletisation**	PROC14

12.2. Conditions of use affecting exposure

12.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Industrial formulation end-products

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

Product (article) characteristics		
Covers concentrations up to		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day

Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.2.4. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Use in closed process, no likelihood of exposure Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.2.6. 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) / Closed system mixing including filling process equipment ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced. Closed batch process with occasional controlled exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.2.7. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		

Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use
Temperature : Assumes process temperature up to 40 °C

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

Product (article) characteristics
Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : Duration of the activity 4 h/day
Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use
Temperature : Assumes process temperature up to 40 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.2.10. Control of worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

Temperature	:	Assumes process temperature up to 40 °C

12.2.11. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.2.13. Control of worker exposure: Production of preparations or articles by tabletting, compression, extrusion, pelletisation (PROC14)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

12.3. Exposure estimation and reference to its source

12.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Industrial formulation end-products

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

12.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,055 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,015

12.3.4. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of received goods ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,0011 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,0034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

12.3.6. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Closed system mixing including filling process equipment ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,991 mg/m³ (ECETOC TRA worker v3)	0,017
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,023

12.3.7. Worker exposure: Mixing or blending in batch processes (PROC5) / Batch mixing with significant contact including filling process ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,192

12.3.9. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Sampling of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,055 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg	0,014

			bw/day (ECETOC TRA worker v3)	
combined routes	systemic	long-term		0,015

12.3.10. Worker exposure: Use as laboratory reagent (PROC15) / Quality control of compounds ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

12.3.11. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Charging/discharging from/to vessels/large ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,078

12.3.13. Worker exposure: Production of preparations or articles by tabletting, compression, extrusion, pelletisation (PROC14)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA	0,046

			worker v3)	
dermal	systemic	long-term	0,343 mg/kg bw/day (ECETOC TRA worker v3)	0,034
combined routes	systemic	long-term		0,08

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 13: Formulation or re-packing

13.1. Title section

Exposure Scenario name	:	Formulation or re-packing, Formulation of fragrance compounds (IFRA GES 1)
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Formulation of fragrance compounds (IFRA GES 1)**	ERC2, Formulation of fragrance compounds (IFRA GES 1)
Worker		
CS 2	**Material transfers from/to vessel/container at dedicated facility (IFRA F-1)**	PROC8b, CS1
CS 3	**Storage (IFRA F-2)**	PROC1, CS2
CS 4	**Mixing operations (closed systems) in batch process including filling of equipment and sample collection (IFRA F-3)**	PROC3, CS3
CS 5	**Mixing operations (open systems) in batch process including filling of equipment and sample collection (IFRA F-4)**	PROC5, CS4
CS 6	**QC laboratory (IFRA F-5)**	PROC15, CS5
CS 7	**Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (IFRA F-6)**	PROC9, CS6
CS 8	**Equipment cleaning and maintenance (IFRA F-7)**	PROC8a, CS7

13.2. Conditions of use affecting exposure

13.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Formulation of fragrance compounds (IFRA GES 1)

13.2.2. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Material transfers from/to vessel/container at dedicated facility (IFRA F-1) (CS1)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.3. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Storage (IFRA F-2) (CS2)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.4. 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) / Mixing operations (closed systems) in batch process including filling of equipment and sample collection (IFRA F-3) (CS3)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day

Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.5. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) in batch process including filling of equipment and sample collection (IFRA F-4) (CS4)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.6. Control of worker exposure: Use as laboratory reagent (PROC15) / QC laboratory (IFRA F-5) (CS5)

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

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (IFRA F-6) (CS6)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Equipment cleaning and maintenance (IFRA F-7) (CS7)

Product (article) characteristics

Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

13.3. Exposure estimation and reference to its source

13.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Formulation of fragrance compounds (IFRA GES 1)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

13.3.2. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Material transfers from/to vessel/container at dedicated facility (IFRA F-1) (CS1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,146

13.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Storage (IFRA F-2) (CS2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,001 mg/m³	< 0,01

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,0034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

13.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Mixing operations (closed systems) in batch process including filling of equipment and sample collection (IFRA F-3) (CS3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,991 mg/m³ (ECETOC TRA worker v3)	0,017
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,023

13.3.5. Worker exposure: Mixing or blending in batch processes (PROC5) / Mixing operations (open systems) in batch process including filling of equipment and sample collection (IFRA F-4) (CS4)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,165

13.3.6. Worker exposure: Use as laboratory reagent (PROC15) / QC laboratory (IFRA F-5) (CS5)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

13.3.7. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (IFRA F-6) (CS6)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,078

13.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Equipment cleaning and maintenance (IFRA F-7) (CS7)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,192

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 14: Widespread use by professional workers

14.1. Title section

Exposure Scenario name	:	Widespread use by professional workers, Professional uses, end-products
Structured Short Title	:	Widespread use by professional workers

Environment		
CS 1	**Professional end-use of washing and cleaning products (IFRA GES 4)**	ERC8d, Professional end-use of washing and cleaning products (IFRA GES 4)
Worker		
CS 2	**The use as fragrance solvent in various products (detergents, laundry products, dishwash products, kitchen cleaners, medical devices)**	PROC8a,
CS 3	**Use of detergent and conditioners**	PROC8a,
CS 4	**The use as fragrance solvent in various products (general purpose cleaners, laundry products, floor and carpet cleaners)**	PROC8a,
CS 5	**The use as fragrance solvent in various products (laundry products, dishwash products, kitchen and drain cleaners)**	PROC8a,
CS 6	**Prespotter/stain remover**	PROC11,
CS 7	**Dishwash products (Use phase)**	PROC10,
CS 8	**Dishwash and rinse products (Preparatory phase)**	PROC8b,
CS 9	**Dishwash and rinse products (Use phase)**	PROC2,
CS 10	**The use as fragrance solvent in various products**	PROC10,
CS 11	**General purpose cleaner, spray and wipe (Use phase)**	PROC11,
CS 12	**Kitchen cleaners (Use phase)**	PROC10,
CS 13	**The use as fragrance solvent in various products**	PROC11,
CS 14	**Descaling agent**	PROC13,
CS 15	**Oven, grill cleaner**	PROC10,
CS 16	**Floor cleaners (Preparatory phase)**	PROC8a,
CS 17	**Floor cleaners, spray and wipe (Use phase)**	PROC11,
CS 18	**The use as fragrance solvent in various products**	PROC8a,
CS 19	**Car wash and dewaxing products (Use phase)**	PROC4,
CS 20	**Spray and rinse process (Use phase)**	PROC11,
CS 21	**Boat cleaners (Use process)**	PROC10,
CS 22	**Surface cleaner: high and medium pressure (Preparatory phase)**	PROC8a,

CS 23	**Surface cleaner: high and medium pressure (Use phase)**	PROC11,
CS 24	**Medical devices (Preparatory process)**	PROC8a,
CS 25	**Medical devices (Use phase)**	PROC4,
CS 26	**Medical devices: dipping process (Preparatory process)**	PROC8a,
CS 27	**Medical devices: dipping process (Use phase)**	PROC13,
CS 28	**The use as fragrance solvent in various products**	PROC11,

14.2. Conditions of use affecting exposure

14.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Professional end-use of washing and cleaning products (IFRA GES 4)

14.2.2. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (detergents, laundry products, dishwash products, kitchen cleaners, medical devices) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.3. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Use of detergent and conditioners ()

Product (article) characteristics

Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.4. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (general purpose cleaners, laundry products, floor and carpet cleaners) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (laundry products, dishwash products, kitchen and drain cleaners) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.6. Control of worker exposure: Non-industrial spraying (PROC11) / Prespotter/stain remover ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Very low application rate (< 0.03 l/minute)		
Technical and organisational conditions and measures		

Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of >= 90 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Room size	:	Any size workroom
Temperature	:	Assumes process temperature up to 25 °C
Distance from the worker to the emission source < 1 m		

14.2.7. Control of worker exposure: Roller application or brushing (PROC10) / Dishwash products (Use phase) ()

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure

Duration	:	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Dishwash and rinse products (Preparatory phase) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.9. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Dishwash and rinse products (Use phase) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Closed continuous process with occasional controlled exposure Provide a basic standard of general ventilation (1 to 3 air changes per hour).		

Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.10. Control of worker exposure: Roller application or brushing (PROC10) / The use as fragrance solvent in various products ()

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure

Duration	:	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.11. Control of worker exposure: Non-industrial spraying (PROC11) / General purpose cleaner, spray and wipe (Use phase) ()

Product (article) characteristics
Covers concentrations up to 15 %

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Low application rate (0.03 - 0.3 l/minute)		
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of >= 90 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	Any size workroom
Temperature	:	Assumes process temperature up to 25 °C
Distance from the worker to the emission source < 1 m		

14.2.12. Control of worker exposure: Roller application or brushing (PROC10) / Kitchen cleaners (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Scale of application for spreading of liquid to surface	:	> 3 m2/h
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		

Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Room size	:	Any size workroom
Temperature	:	Assumes process temperature up to 25 °C
Distance from the worker to the emission source < 1 m		

14.2.13. Control of worker exposure: Non-industrial spraying (PROC11) / The use as fragrance solvent in various products ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.14. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13) / Descaling agent ()

Product (article) characteristics
Covers concentrations up to 15 %

Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.15. Control of worker exposure: Roller application or brushing (PROC10) / Oven, grill cleaner ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.16. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Floor cleaners (Preparatory phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.17. Control of worker exposure: Non-industrial spraying (PROC11) / Floor cleaners, spray and wipe (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Low application rate (0.03 - 0.3 l/minute)		

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic. Segregation of the source: No segregation
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of >= 90 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Room size	:	Any size workroom
Temperature	:	Assumes process temperature up to 25 °C

14.2.18. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products ()

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Physical form of product	:	Liquid

Amount used (or contained in articles), frequency and duration of use/exposure

Use frequency	:	Duration of the activity 1 h/day

Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Outdoor use

Temperature	:	Assumes process temperature up to 40 °C

14.2.19. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Car wash and dewaxing products (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.20. Control of worker exposure: Non-industrial spraying (PROC11) / Spray and rinse process (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Moderate application rate (0.3 - 3 l/minute)		
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.		

Occupational Health and Safety Management System: Basic. No containment
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants)
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of >= 90 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Outdoor use
Temperature : Assumes process temperature up to 25 °C
Distance from the worker to the emission source < 1 m

14.2.21. Control of worker exposure: Roller application or brushing (PROC10) / Boat cleaners (Use process) ()

Product (article) characteristics
Covers concentrations up to 15 %
Physical form of product : Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Scale of application for spreading of liquid to surface : > 3 m2/h
Duration : Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Occupational Health and Safety Management System: Basic.
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Outdoor use
Temperature : Assumes process temperature up to 25 °C
Distance from the worker to the emission source < 1 m

14.2.22. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Surface cleaner: high and medium pressure (Preparatory phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 0,25 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.23. Control of worker exposure: Non-industrial spraying (PROC11) / Surface cleaner: high and medium pressure (Use phase) ()

Product (article) characteristics		
Covers concentrations up to 15 %		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Moderate application rate (0.3 - 3 l/minute)		
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Occupational Health and Safety Management System: Basic.		

Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
Wear suitable respiratory protection. Dermal - minimum efficiency of >= 90 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.24. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Medical devices (Preparatory process) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Local exhaust ventilation Dermal - minimum efficiency of 80 % Inhalation - minimum efficiency of 80 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.25. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Medical devices (Use phase) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Local exhaust ventilation Dermal - minimum efficiency of 80 % Inhalation - minimum efficiency of 80 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.26. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Medical devices: dipping process (Preparatory process) ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing.		

Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.
Local exhaust ventilation Dermal - minimum efficiency of 80 % Inhalation - minimum efficiency of 80 %
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use
Temperature : Assumes process temperature up to 40 °C

14.2.27. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13) / Medical devices: dipping process (Use phase) ()

Product (article) characteristics
Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : Duration of the activity 4 h/day
Technical and organisational conditions and measures
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.
Local exhaust ventilation Dermal - minimum efficiency of 80 % Inhalation - minimum efficiency of 80 %
Conditions and measures related to personal protection, hygiene and health evaluation
General measures (eye irritants) Use suitable eye protection.
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.2.28. Control of worker exposure: Non-industrial spraying (PROC11) / The use as fragrance solvent in various products ()

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 15 min/day
Technical and organisational conditions and measures		
Avoid direct eye contact with product, also via contamination on hands. Avoid splashing. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants)		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 40 °C

14.3. Exposure estimation and reference to its source

14.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Professional end-use of washing and cleaning products (IFRA GES 4)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

14.3.2. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (detergents, laundry products, dishwash products, kitchen cleaners, medical devices) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,377 mg/m³	0,023

			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,05

14.3.3. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Use of detergent and conditioners ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,367

14.3.4. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (general purpose cleaners, laundry products, floor and carpet cleaners) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,073

14.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products (laundry products, dishwash products, kitchen and drain cleaners) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,377 mg/m³ (ECETOC TRA worker v3)	0,023
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,16

14.3.6. Worker exposure: Non-industrial spraying (PROC11) / Prespotter/stain remover ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	4,3 mg/m³ (ART v1.5)	0,072
dermal	systemic	long-term	6,428 mg/kg bw/day (ECETOC TRA worker v3)	0,643
combined routes	systemic	long-term		0,715

14.3.7. Worker exposure: Roller application or brushing (PROC10) / Dishwash products (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	0,549 mg/kg bw/day (ECETOC TRA worker v3)	0,055
combined routes	systemic	long-term		0,284

14.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Dishwash and rinse products (Preparatory phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,037

14.3.9. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Dishwash and rinse products (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,014
combined routes	systemic	long-term		0,018

14.3.10. Worker exposure: Roller application or brushing (PROC10) / The use as fragrance solvent in various products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,504

14.3.11. Worker exposure: Non-industrial spraying (PROC11) / General purpose cleaner, spray and wipe (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,2 mg/m³ (ART v1.5)	0,053
dermal	systemic	long-term	6,428 mg/kg bw/day (ECETOC TRA worker v3)	0,643
combined routes	systemic	long-term		0,696

14.3.12. Worker exposure: Roller application or brushing (PROC10) / Kitchen cleaners (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	17 mg/m³ (ART v1.5)	0,283
dermal	systemic	long-term	3,292 mg/kg bw/day (ECETOC TRA worker v3)	0,329
combined routes	systemic	long-term		0,612

14.3.13. Worker exposure: Non-industrial spraying (PROC11) / The use as fragrance solvent in various products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	2,143 mg/kg bw/day (ECETOC TRA worker v3)	0,214
combined routes	systemic	long-term		0,306

14.3.14. Worker exposure: Treatment of articles by dipping and pouring (PROC13) / Descaling agent ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	6,608 mg/m³ (ECETOC TRA worker v3)	0,11
dermal	systemic	long-term	1,645 mg/kg bw/day (ECETOC TRA worker v3)	0,165
combined routes	systemic	long-term		0,275

14.3.15. Worker exposure: Roller application or brushing (PROC10) / Oven, grill cleaner ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	16,52 mg/m³ (ECETOC TRA worker v3)	0,275
dermal	systemic	long-term	3,292 mg/kg bw/day (ECETOC TRA worker v3)	0,329
combined routes	systemic	long-term		0,604

14.3.16. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Floor cleaners (Preparatory phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	16,52 mg/m³ (ECETOC TRA worker v3)	0,275
dermal	systemic	long-term	1,645 mg/kg bw/day (ECETOC TRA worker v3)	0,165
combined routes	systemic	long-term		0,44

14.3.17. Worker exposure: Non-industrial spraying (PROC11) / Floor cleaners, spray and wipe (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,1 mg/m³ (ART v1.5)	0,018
dermal	systemic	long-term	6,428 mg/kg bw/day (ECETOC TRA worker v3)	0,643
combined routes	systemic	long-term		0,661

14.3.18. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / The use as fragrance solvent in various products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,927 mg/m³ (ECETOC TRA worker v3)	0,032
dermal	systemic	long-term	0,274 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,06

14.3.19. Worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Car wash and dewaxing products (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	23,12 mg/m³ (ECETOC TRA worker v3)	0,385
dermal	systemic	long-term	0,823 mg/kg bw/day (ECETOC TRA worker v3)	0,082
combined routes	systemic	long-term		0,468

14.3.20. Worker exposure: Non-industrial spraying (PROC11) / Spray and rinse process (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	4,9 mg/m³ (ART v1.5)	0,082
dermal	systemic	long-term	6,428 mg/kg bw/day (ECETOC TRA worker v3)	0,643
combined routes	systemic	long-term		0,725

14.3.21. Worker exposure: Roller application or brushing (PROC10) / Boat cleaners (Use process) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,9 mg/m³ (ART v1.5)	0,065
dermal	systemic	long-term	3,292 mg/kg bw/day (ECETOC TRA worker v3)	0,329
combined routes	systemic	long-term		0,394

14.3.22. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Surface cleaner: high and medium pressure (Preparatory phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,782 mg/m³ (ECETOC TRA worker v3)	0,096
dermal	systemic	long-term	1,645 mg/kg bw/day (ECETOC TRA worker v3)	0,165
combined routes	systemic	long-term		0,261

14.3.23. Worker exposure: Non-industrial spraying (PROC11) / Surface cleaner: high and medium pressure (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	23,12 mg/m³ (ECETOC TRA worker v3)	0,385
dermal	systemic	long-term	3,275 mg/kg bw/day (RISKOFDERM v2.1)	0,328
combined routes	systemic	long-term		0,713

14.3.24. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Medical devices (Preparatory process) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,055 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,015

14.3.25. Worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Medical devices (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,661 mg/m³ (ECETOC TRA worker v3)	0,011
dermal	systemic	long-term	0,027 mg/kg bw/day (ECETOC	< 0,01

			TRA worker v3)	
combined routes	systemic	long-term		0,014

14.3.26. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Medical devices: dipping process (Preparatory process) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,275 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,055 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,01

14.3.27. Worker exposure: Treatment of articles by dipping and pouring (PROC13) / Medical devices: dipping process (Use phase) ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,661 mg/m³ (ECETOC TRA worker v3)	0,011
dermal	systemic	long-term	0,055 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,016

14.3.28. Worker exposure: Non-industrial spraying (PROC11) / The use as fragrance solvent in various products ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	2,143 mg/kg bw/day (ECETOC TRA worker v3)	0,214
combined routes	systemic	long-term		0,306

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment

- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 15: Consumer use

15.1. Title section

Exposure Scenario name	:	Consumer use, End use of cosmetic products
Structured Short Title	:	Consumer use

Environment		
CS 1	**End use of cosmetic products**	ERC8a, End use of cosmetic products
Consumer		
CS 2	**End use of cosmetic products**	PC39,
CS 3	**End use of cosmetic products**	PC28,

15.2. Conditions of use affecting exposure

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

15.2.2. Control of consumer exposure: Cosmetics, personal care products (PC39) / End use of cosmetic products ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

15.2.3. Control of consumer exposure: Perfumes, fragrances (PC28) / End use of cosmetic products ()

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent

Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor use

15.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

15.3.2. Consumer exposure: Cosmetics, personal care products (PC39) / End use of cosmetic products ()

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

15.3.3. Consumer exposure: Perfumes, fragrances (PC28) / End use of cosmetic products ()

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 16: Formulation or re-packing

16.1. Title section

Exposure Scenario name	:	Formulation or re-packing
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**Formulation of fragrance compounds**	ERC2, IFRA SPERC 2.1a.v1
CS 2	**Formulation of fragrance compounds at small sites**	ERC2, IFRA SPERC 2.1b.v1
Worker		
CS 3	**Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**	PROC3
CS 4	**Storage**	PROC1
CS 5	**Mixing operations (closed systems)**	PROC3
CS 6	**Mixing operations (open systems)**	PROC5
CS 7	**Laboratory use: QC laboratory use**	PROC15
CS 8	**Transfer of substance or mixture into small containers (dedicated filling line, including weighing)**	PROC9
CS 9	**Equipment cleaning and maintenance**	PROC8a, PROC28

16.2. Conditions of use affecting exposure

16.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / IFRA SPERC 2.1a.v1

16.2.2. Control of environmental exposure: Formulation into mixture (ERC2) / IFRA – Formulation of fragrance compounds at small sites (IFRA SPERC 2.1b.v1)

16.2.3. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		

Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection. General measures (eye irritants)
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.4. 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 100 %.

Physical form of product	:	Liquid, including paste/slurry/suspension

Amount used (or contained in articles), frequency and duration of use/exposure

Use frequency	:	Duration of the activity 1 h/day

Technical and organisational conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation
No specific measures identified.
For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.5. 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, including paste/slurry/suspension

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.6. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.7. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 0,25 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced. Local exhaust ventilation		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.8. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Manual maintenance (cleaning and repair) of machinery (PROC28)

Product (article) characteristics		
Covers percentage substance in the product up to 25 %.		
Physical form of product	:	Liquid, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of >= 90 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

16.3. Exposure estimation and reference to its source

16.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / IFRA SPERC 2.1a.v1

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

16.3.2. Environmental release and exposure: Formulation into mixture (ERC2) / IFRA – Formulation of fragrance compounds at small sites (IFRA SPERC 2.1b.v1)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

16.3.3. 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 estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,366

16.3.4. 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 estimate	RCR
inhalative	systemic	long-term	0,001 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,0034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

16.3.5. 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 estimate	RCR
inhalative	systemic	long-term	9,912 mg/m³ (ECETOC TRA worker v3)	0,165
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,234

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	16,52 mg/m³ (ECETOC TRA worker v3)	0,275
dermal	systemic	long-term	2,742 mg/kg bw/day (ECETOC TRA worker v3)	0,274

combined routes	systemic	long-term		0,55

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,34 mg/kg bw/day (ECETOC TRA worker v3)	0,034
combined routes	systemic	long-term		0,08

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	4,116 mg/kg bw/day (ECETOC TRA worker v3)	0,412
combined routes	systemic	long-term		0,467

16.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Manual maintenance (cleaning and repair) of machinery (PROC28)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	19,82 mg/m³ (ECETOC TRA worker v3)	0,33
dermal	systemic	long-term	0,823 mg/kg bw/day (ECETOC TRA worker v3)	0,082
combined routes	systemic	long-term		0,413

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 17: Formulation or re-packing

17.1. Title section

Exposure Scenario name	:	Formulation of fragranced end-products (GES 2), Formulation or re-packing
Structured Short Title	:	Formulation or re-packing

Environment		
CS 1	**AISE Granular & Low Viscosity Liquids + CE/A.I.S.E. solid cosmetic & home care products - large scale**	ERC3, AISE 2.1a.v3
CS 2	**AISE Granular & Low Viscosity Liquids - CE/A.I.S.E. solid cosmetic & home care products medium scale**	ERC3, AISE 2.1b.v3
CS 3	**AISE Granular & Low Viscosity Liquids CE/A.I.S.E. solid cosmetic & home care products - small scale**	ERC3, AISE 2.1c.v3
CS 4	**AISE High Viscosity Liquids + CE Low Viscosity Liquids - large scale**	ERC3, AISE 2.1j.v3
CS 5	**AISE High Viscosity Liquids + CE Low Viscosity Liquids - medium scale**	ERC3, AISE 2.1k.v3
CS 6	**AISE High Viscosity Liquids + CE Low Viscosity Liquids - small scale**	ERC3, AISE 2.1l.v3
CS 7	**AISE & CE Fine Fragrances (cleaning with solvent) - all scales**	ERC3, Cosmetics Europe SPERC 2.2.a.v3
CS 8	**Cosmetics Europe - Other formulations - all scales**	ERC3
Worker		
CS 9	**Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**	PROC8b
CS 10	**Laboratory use: QC laboratory use**	PROC15
CS 11	**Storage**	PROC1
CS 12	**Use in closed batch process (synthesis or formulation)**	PROC3
CS 13	**Mixing operations (open systems)**	PROC5
CS 14	**Equipment cleaning and maintenance**	PROC8a, PROC28
CS 15	**Transfer of substance or mixture into small containers (dedicated filling line, including weighing)**	PROC9
CS 16	**Production of preparations or articles by tabletting, compression, extrusion, pelletisation**	PROC14

17.2. Conditions of use affecting exposure

17.2.1. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1a.v3

17.2.2. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1b.v3

17.2.3. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1c.v3

17.2.4. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1j.v3

17.2.5. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1k.v3

17.2.6. Control of environmental exposure: Formulation in materials (ERC3) / AISE 2.1l.v3

17.2.7. Control of environmental exposure: Formulation in materials (ERC3) / Cosmetics Europe SPERC 2.2.a.v3

17.2.8. Control of environmental exposure: Formulation in materials (ERC3)

17.2.9. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
General measures (eye irritants) Use suitable eye protection.		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.10. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 0,25 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.11. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
No specific measures identified.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.12. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.13. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		

For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.14. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Manual maintenance (cleaning and repair) of machinery (PROC28)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 4 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.15. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		

Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.2.16. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Advanced.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

17.3. Exposure estimation and reference to its source

17.3.1. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1a.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.2. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1b.v3

Additional information on exposure estimation

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.3. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1c.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.4. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1j.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.5. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1k.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.6. Environmental release and exposure: Formulation in materials (ERC3) / AISE 2.1l.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.7. Environmental release and exposure: Formulation in materials (ERC3) / Cosmetics Europe SPERC 2.2.a.v3

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

17.3.8. Environmental release and exposure: Formulation in materials (ERC3)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	1,645 mg/kg	0,165

			bw/day (ECETOC TRA worker v3)	
combined routes	systemic	long-term		0,22

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,204 mg/kg bw/day (ECETOC TRA worker v3)	0,02
combined routes	systemic	long-term		0,048

17.3.11. 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 estimate	RCR
inhalative	systemic	long-term	0,00661 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,02 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

17.3.12. 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 estimate	RCR
inhalative	systemic	long-term	5,947 mg/m³ (ECETOC TRA worker v3)	0,099
dermal	systemic	long-term	0,414 mg/kg bw/day (ECETOC TRA worker v3)	0,041
combined routes	systemic	long-term		0,141

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	9,912 mg/m³ (ECETOC TRA worker v3)	0,165

dermal	systemic	long-term	1,645 mg/kg bw/day (ECETOC TRA worker v3)	0,165
combined routes	systemic	long-term		0,33

17.3.14. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Manual maintenance (cleaning and repair) of machinery (PROC28)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	3,304 mg/m³ (ECETOC TRA worker v3)	0,055
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,192

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,078

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	0,034
combined routes	systemic	long-term		0,08

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)

- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 18: Widespread use by professional workers

18.1. Title section

Exposure Scenario name	:	Professional end-use of washing, cleaning and disinfecting products
Structured Short Title	:	Widespread use by professional workers

Environment		
CS 1	**Professional end-use of washing, cleaning and disinfecting products, Use at industrial site**	ERC8a
Worker		
CS 2	**Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions**	PROC1
CS 3	**Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition**	PROC3
CS 4	**Chemical production where opportunity for exposure arises**	PROC4
CS 5	**Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**	PROC8a
CS 6	**Transfer of substance or mixture (charging/discharging) at dedicated facilities**	PROC8b
CS 7	**Roller application or brushing**	PROC10
CS 8	**Non industrial spraying**	PROC11
CS 9	**Treatment of articles by dipping and pouring**	PROC13
CS 10	**Manual activities involving hand contact**	PROC19

18.2. Conditions of use affecting exposure

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

18.2.2. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour).		

Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
No specific measures identified.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.3. 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 1 %.		
Physical form of product	:	Liquid, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.4. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day

Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.5. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.6. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.7. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.8. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		
Wear suitable respiratory protection. APF 10		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.9. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.2.10. Control of worker exposure: Manual activities involving hand contact (PROC19)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

18.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

18.3.2. 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 estimate	RCR
inhalative	systemic	long-term	0,00551 mg/m³ (ECETOC TRA	< 0,01

			worker v3)	
dermal	systemic	long-term	0,0034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

18.3.3. 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 estimate	RCR
inhalative	systemic	long-term	1,652 mg/m³ (ECETOC TRA worker v3)	0,028
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		0,034

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,16

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,183

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR

inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,155

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,504

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	2,143 mg/kg bw/day (ECETOC TRA worker v3)	0,214
combined routes	systemic	long-term		0,306

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,155

18.3.10. Worker exposure: Manual activities involving hand contact (PROC19)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR

inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,829 mg/kg bw/day (ECETOC TRA worker v3)	0,283
combined routes	systemic	long-term		0,512

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 19: Widespread use by professional workers

19.1. Title section

Exposure Scenario name	:	Professional uses as polishes and wax blends
Structured Short Title	:	Widespread use by professional workers

Environment		
CS 1	**Professional end-use of polishes and wax blends**	ERC8a
Worker		
CS 2	**Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions**	PROC1
CS 3	**Chemical production where opportunity for exposure arises**	PROC4
CS 4	**Transfer of substance or mixture (charging/discharging) at non dedicated-facilities**	PROC8a
CS 5	**Roller application or brushing**	PROC10
CS 6	**Treatment of articles by dipping and pouring**	PROC13
CS 7	**Manual activities involving hand contact**	PROC19

19.2. Conditions of use affecting exposure

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

19.2.2. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
No specific measures identified.		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.2.3. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.2.4. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		

For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.2.5. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.2.6. 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, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 1 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		

Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.2.7. Control of worker exposure: Manual activities involving hand contact (PROC19)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Physical form of product	:	Liquid, including paste/slurry/suspension
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	Duration of the activity 8 h/day
Technical and organisational conditions and measures		
Provide a basic standard of general ventilation (1 to 3 air changes per hour). Occupational Health and Safety Management System: Basic.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Use suitable eye protection. General measures (eye irritants)		
Use of appropriate dermal protection Dermal - minimum efficiency of >= 80 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use
Temperature	:	Assumes process temperature up to 25 °C

19.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

19.3.2. 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 estimate	RCR
inhalative	systemic	long-term	0,00551 mg/m³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,0034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	5,507 mg/m³ (ECETOC TRA worker v3)	0,092
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,069
combined routes	systemic	long-term		0,16

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,753 mg/m³ (ECETOC TRA worker v3)	0,046
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,183

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,274
combined routes	systemic	long-term		0,504

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,101 mg/m³ (ECETOC TRA worker v3)	0,018
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,137
combined routes	systemic	long-term		0,155

19.3.7. Worker exposure: Manual activities involving hand contact (PROC19)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	13,76 mg/m³ (ECETOC TRA worker v3)	0,229
dermal	systemic	long-term	2,829 mg/kg bw/day (ECETOC TRA worker v3)	0,283
combined routes	systemic	long-term		0,512

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 20: Consumer use

20.1. Title section

Exposure Scenario name	:	Consumers end-use of washing and cleaning products
Structured Short Title	:	Consumer use

Environment		
CS 1	**Consumers end-use of washing and cleaning products, Covers indoor and outdoor use.**	ERC8d, ERC8a
Consumer		
CS 2	**Laundry products**	PC35,
CS 3	**Fabric conditioners**	PC35,
CS 4	**Surface cleaners, no spraying**	PC35
CS 5	**Toilet cleaners, no spraying**	PC35
CS 6	**Carpet cleaners, No spraying**	PC35
CS 7	**Wipes**	PC35
CS 8	**High pressure washers/cleaners**	PC35
CS 9	**Automotive care, no spraying**	PC35
CS 10	**Surface cleaners (liquid), Spraying**	PC35
CS 11	**Oven cleaners, Spraying**	PC35
CS 12	**Carpet cleaners, Spraying**	PC35
CS 13	**Automotive care, Spraying**	PC35
CS 14	**Machine dishwashing products**	PC35,
CS 15	**Hand dishwashing liquids**	PC35,

20.2. Conditions of use affecting exposure

20.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

20.2.2. Control of consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_1_a_1 ()

Product (article) characteristics		
Covers concentrations up to 0,05 %		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent

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

20.2.3. Control of consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_2_a_1 ()

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent 210 days/year
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.

20.2.4. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	60 g/event
Use frequency	:	Frequent 0,33 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.5. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,3 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	35 g/event

Use frequency	:	Frequent 0,02 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.6. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	110 g/event
Use frequency	:	Frequent 0,3 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.7. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	26 g/event
Use frequency	:	Frequent 0,08 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.8. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics

Covers concentrations up to 0,1 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	50 g/event
Use frequency	:	Infrequent 5 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.9. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,25 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	200 g/event
Use frequency	:	Infrequent 5 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.10. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	30 g/event
Use frequency	:	Frequent 0,33 h/event
Other conditions affecting consumers exposure		

Body parts exposed	:	Assumes that potential dermal contact is limited to hands.

20.2.11. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	30 g/event
Use frequency	:	Frequent 0,2 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor

20.2.12. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	30 g/event
Use frequency	:	Frequent 0,2 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.13. Control of consumer exposure: Washing and cleaning products (PC35)

Product (article) characteristics		
Covers concentrations up to 0,25 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		

Exposure frequency	:	1 events/day
Amount per Application	:	200 g/event
Use frequency	:	Frequent 5 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	:	Indoor use

20.2.14. Control of consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_4_a_1 ()

Product (article) characteristics		
Covers concentrations up to 0,05 %		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Use frequency	:	Frequent 261 days/year
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.

20.2.15. Control of consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_5_a_1 ()

Product (article) characteristics		
Covers concentrations up to 0,05 %		
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	2 events/day
Use frequency	:	Frequent 365 days/year
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to hands.

20.3. Exposure estimation and reference to its source

20.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

20.3.2. Consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_1_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,071 mg/kg bw/day (ECETOC TRA consumer v3)	0,014
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,014

20.3.3. Consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_2_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,029

20.3.4. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,504 mg/m³ (ECETOC TRA consumer v3)	0,167
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,196

20.3.5. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,155 mg/m³ (ECETOC TRA	0,077

			consumer v3)	
dermal	systemic	long-term	0,429 mg/kg bw/day (ECETOC TRA consumer v3)	0,086
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,163

20.3.6. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,554 mg/m³ (ECETOC TRA consumer v3)	0,104
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,132

20.3.7. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,238 mg/m³ (ECETOC TRA consumer v3)	0,083
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,111

20.3.8. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,625 mg/m³ (ECETOC TRA consumer v3)	0,042
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029

oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,07

20.3.9. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	6,25 mg/m³ (ECETOC TRA consumer v3)	0,417
dermal	systemic	long-term	0,357 mg/kg bw/day (ECETOC TRA consumer v3)	0,071
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,488

20.3.10. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,417 mg/m³ (ECETOC TRA consumer v3)	0,028
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,056

20.3.11. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,298 mg/m³ (ECETOC TRA consumer v3)	0,02
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,048

20.3.12. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0,298 mg/m³ (ECETOC TRA consumer v3)	0,02
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,048

20.3.13. Consumer exposure: Washing and cleaning products (PC35)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	6,25 mg/m³ (ECETOC TRA consumer v3)	0,417
dermal	systemic	long-term	0,357 mg/kg bw/day (ECETOC TRA consumer v3)	0,071
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,488

20.3.14. Consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_4_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,036 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		< 0,01

20.3.15. Consumer exposure: Washing and cleaning products (PC35) / AISE_SCED_PC35_5_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR

inhalative	systemic	long-term	0 mg/m³ (ECETOC TRA consumer v3)	< 0,01
dermal	systemic	long-term	0,143 mg/kg bw/day (ECETOC TRA consumer v3)	0,029
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,029

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

Environment
If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 21: Consumer use

21.1. Title section

Exposure Scenario name	:	Consumer end-use of air care products
Structured Short Title	:	Consumer use

Environment		
CS 1	**Consumer end-use of air care products**	ERC8a
Consumer		
CS 2	**Air care products (non-aerosol)**	PC3,
CS 3	**Air care products (aerosol)**	PC3,

21.2. Conditions of use affecting exposure

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

21.2.2. Control of consumer exposure: Air care products (PC3) / AISE_SCED_PC3_7_a_1 ()

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	2,5 g/event
Use frequency	:	Frequent 8 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to fingertips.
Indoor or outdoor use	:	Indoor

21.2.3. Control of consumer exposure: Air care products (PC3) / AISE_SCED_PC3_7_b_1 ()

Product (article) characteristics		
Covers concentrations up to 0,25 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	2 events/day

Amount per Application	:	10 g/event
Use frequency	:	Frequent 0,25 h/event
Other conditions affecting consumers exposure		
Indoor or outdoor use	:	Indoor

21.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

21.3.2. Consumer exposure: Air care products (PC3) / AISE_SCED_PC3_7_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	1,078 mg/m³ (ECETOC TRA consumer v3)	0,072
dermal	systemic	long-term	0,125 mg/kg bw/day (ECETOC TRA consumer v3)	0,025
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,097

21.3.3. Consumer exposure: Air care products (PC3) / AISE_SCED_PC3_7_b_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	2,174 mg/m³ (ECETOC TRA consumer v3)	0,145
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		0,145

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.
The main driving parameters are :
- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Human Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 22: Consumer use

22.1. Title section

Exposure Scenario name	:	Consumer, End-uses of polish and wax blends
Structured Short Title	:	Consumer use

Environment		
CS 1	**Consumer end-use of polishes and wax blends**	ERC8a
Consumer		
CS 2	**Polishes, wax / cream, No spraying**	PC31,
CS 3	**Polishes and wax blends, Spraying**	PC31,

22.2. Conditions of use affecting exposure

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

22.2.2. Control of consumer exposure: Polishes and wax blends (PC31) / AISE_SCED_PC31_6_a_1 ()

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	No spray
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day
Amount per Application	:	550 g/event
Use frequency	:	Infrequent 4 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.
Indoor or outdoor use	:	Indoor

22.2.3. Control of consumer exposure: Polishes and wax blends (PC31) / AISE_SCED_PC31_6_b_1 ()

Product (article) characteristics		
Covers concentrations up to 0,1 %		
Physical form of product	:	Sprays
Amount used (or contained in articles), frequency and duration of use/exposure		
Exposure frequency	:	1 events/day

Amount per Application	:	135 g/event
Use frequency	:	Infrequent 1 h/event
Other conditions affecting consumers exposure		
Body parts exposed	:	Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands.
Indoor or outdoor use	:	Indoor

22.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

22.3.2. Consumer exposure: Polishes and wax blends (PC31) / AISE_SCED_PC31_6_a_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	8,088 mg/m³ (ECETOC TRA consumer v3)	0,539
dermal	systemic	long-term	0,071 mg/kg bw/day (ECETOC TRA consumer v3)	0,014
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,554

22.3.3. Consumer exposure: Polishes and wax blends (PC31) / AISE_SCED_PC31_6_b_1 ()

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	systemic	long-term	4,219 mg/m³ (ECETOC TRA consumer v3)	0,281
dermal	systemic	long-term	0,071 mg/kg bw/day (ECETOC TRA consumer v3)	0,014
oral	systemic	long-term	0 mg/kg bw/day (ECETOC TRA consumer v3)	< 0,01
combined routes	systemic	long-term		0,296

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least

ES 23: Consumer use

23.1. Title section

Exposure Scenario name	:	Consumer, End use of cosmetic products
Structured Short Title	:	Consumer use

Environment		
CS 1	**Consumer end-use of cosmetics**	ERC8a
Consumer		
CS 2	**Perfumes, fragrances**	PC28
CS 3	**Cosmetics, personal care products**	PC39

23.2. Conditions of use affecting exposure

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

23.2.2. Control of consumer exposure: Perfumes, fragrances (PC28)

23.2.3. Control of consumer exposure: Cosmetics, personal care products (PC39)

23.3. Exposure estimation and reference to its source

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

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

23.3.2. Consumer exposure: Perfumes, fragrances (PC28)

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

23.3.3. Consumer exposure: Cosmetics, personal care products (PC39)

Additional information on exposure estimation
In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

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

Environment

If a DU has OC/RMMs outside specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are :

- local amount used (tonnage)
- release factor prior to on-site treatment
- on-site wastewater treatment presence and efficiency
- dilution factor

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Human Health

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least