



# Safety Data Sheet

according to Regulation (EC) 1907/2006 (REACH)

Revision date: 2020-01-16

Supersedes: 2019-01-09

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

### 1.1. Product identifier:

**Product trade name:** Kalama\* Cinnamic Alcohol, FCC  
**Company product number:** CNALCFCC  
**REACH registration number:** 01-2119934496-29-0003  
**Substance name:** Cinnamyl alcohol  
**Substance identification number:** EC 203-212-3  
**Other means of identification:** Cinnamyl alcohol, 3-Phenyl-2-propen-1-ol, Styryl carbinol

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

**Uses:** Flavor and fragrance ingredient/additive. See Annex for covered uses.  
Intermediate.  
**Uses advised against:** None identified

### 1.3. Details of the supplier of the safety data sheet:

**Manufacturer/Supplier:** Emerald Performance Materials, LLC  
Emerald Kalama Chemical, LLC  
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Email: product.compliance@emeraldmaterials.com

**For further information about this SDS:**

### 1.4. Emergency telephone number:

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA);  
1-300-954-583 (Australia); 000-800-100-4086 (India).

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture:

**Product classification according to Regulation (EC) 1272/2008 (CLP) as amended:**

Skin Irritation, category 2, H315  
Skin Sensitizer, category 1, H317

### 2.2. Label elements:

**Product labeling according to Regulation (EC) 1272/2008 (CLP) as amended:**

**Hazard pictogram(s):**

**Signal word:**

Warning

**Hazard statements:**

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

**Precautionary statements:**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

**Supplemental information:**

No Additional Information

Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III and ECHA Guidance on Labelling and Packaging. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

**2.3. Other hazards:****PBT/vPvB criteria:**

This product does not meet the PBT and vPvB classification criteria.

**Other hazards:**

No Additional Information

See Section 11 for toxicological information.

## SECTION 3: Composition/information on ingredients

**3.1. Substance:**

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>	<u>Classification</u>	<u>H Statements</u>
000104-54-1	Cinnamyl alcohol	98-100	Skin Irrit. 2- Skin Sens. 1	H315-317
000104-55-2	Cinnamaldehyde	0.1-<1.0	Acute Tox. 4 Dermal- Eye Irrit. 2- Skin Irrit. 2- Skin Sens. 1	H312-315-317-319
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>	<u>REACH Registration No.</u>	<u>EC/List Number</u>
000104-54-1	Cinnamyl alcohol	98-100	01-2119934496-29-0003	203-212-3
000104-55-2	Cinnamaldehyde	0.1-<1.0	Impurity	203-213-9

See Section 16 for full text of H (Hazard) statements (EC 1272/2008).

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

## SECTION 4: First aid measures

**4.1. Description of first aid measures:**

**General:** If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

**Eye contact:** Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

**Skin contact:** Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. If skin irritation occurs: Get medical advice/attention.

**Inhalation:** If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

**Ingestion:** Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

**Protection of first aid responders:** Wear proper personal protective clothing and equipment.

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

Irritation. Pre-existing skin problems may be aggravated by prolonged or repeated contact. See section 11 for additional information.

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

Treat symptomatically.

## SECTION 5: Firefighting measures

**5.1. Extinguishing media:**

**Suitable:** Carbon dioxide, dry chemical, foam, water fog.

**Unsuitable:** None known.

**5.2. Special hazards arising from the substance or mixture:**

**Unusual fire/explosion hazards:** Product is not considered a fire hazard, but will burn if ignited.

**Hazardous combustion products:** Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See section 10 (10.6 Hazardous decomposition products) for additional information.

**5.3. Advice for firefighters:**

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures:**

See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Personal Protective Equipment must be worn.

**6.2. Environmental precautions:**

Do not flush product into public sewer, water systems or surface waters.

**6.3. Methods and material for containment and cleaning up:**

Contain spill. Wear proper personal protective clothing and equipment. Sweep up carefully and place into container for reuse or disposal. Avoid causing dust. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and laundry before reuse.

**6.4. References to other sections:**

See Section 8 for recommendations on the use of personal protection and Section 13 for waste disposal.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling:**

As with any chemical product, use good laboratory/workplace procedures. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye and skin contact. Avoid breathing dust. Avoid drinking, tasting, swallowing or ingesting this product. Wash contaminated clothing before reuse. Provide eyewash fountains and safety showers in the work area.

**7.2. Conditions for safe storage, including any incompatibilities:**

Store cool and dry, under well-ventilated conditions. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Product can easily oxidize.

SDS Name: Kalama\* Cinnamic Alcohol, FCC

It is recommended that opened containers be padded with nitrogen.

### 7.3. Specific end use(s):

Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

## SECTION 8: Exposure controls / personal protection

### 8.1. Control parameters:

#### Occupational exposure limits (OEL):

<u>Chemical Name</u>	<u>EU OELV</u>	<u>EU IOELV</u>	<u>ACGIH - TWA/Ceiling</u>	<u>ACGIH - STEL</u>
Cinnamyl alcohol	N/E	N/E	N/E	N/E
Cinnamaldehyde	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>UK WEL</u>	<u>Ireland OEL</u>		
Cinnamyl alcohol	N/E	N/E		
Cinnamaldehyde	N/E	N/E		

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

#### Derived No Effect Levels (DNELs):

##### Cinnamyl alcohol

<u>Population</u>	<u>Route</u>	<u>Acute (local)</u>	<u>Acute (systemic)</u>	<u>Long Term (local)</u>	<u>Long Term (systemic)</u>
Workers	Inhalation	N/E	N/E	N/E	8,8 mg/m <sup>3</sup>
Workers	Dermal	N/E	N/E	N/E	2,5 mg/kg bw/day
General population	Inhalation	N/E	N/E	N/E	1,32 mg/m <sup>3</sup>
General population	Dermal	N/E	N/E	N/E	0,892 mg/kg bw/day
General population	Oral	N/E	N/E	N/E	0,892 mg/kg bw/day
Humans via the environment	Inhalation	N/E	N/E	N/E	1,32 mg/m <sup>3</sup>
Humans via the environment	Oral	N/E	N/E	N/E	0,892 mg/kg bw/day

#### Predicted No Effect Concentration (PNECs):

##### Cinnamyl alcohol

<u>Compartment</u>	<u>PNEC</u>
Freshwater	7,7 µg/L
Freshwater sediment	0,118 mg/kg dw
Marine water	0,77 µg/L
Marine water sediment	11,8 µg/kg dw
Intermittent releases	77 µg/L
Soil	19 µg/kg dw
Oral	No potential for bioaccumulation

N/E=Not established; N/A=Not applicable (not required); bw=body weight; dw=dry weight; ww=wet weight.

### 8.2. Exposure controls:

**Appropriate engineering controls:** Always provide effective general and, when necessary, local exhaust ventilation to draw dust away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS.

#### Individual protection measures, such as personal protective equipment:

**Eye/face protection:** Wear eye protection.

**Hand protection:** Avoid skin contact when mixing or handling the material by wearing impervious and chemical resistant gloves. In case of prolonged immersion or frequently repeated contact, gloves with breakthrough times greater than 480 minutes (protection class 6) are recommended. For brief contact or splash applications, gloves with breakthrough times of 30 minutes or greater are recommended (protection class 2 or greater). Suggested materials for protective gloves: Butyl rubber, Viton. The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374. Suitability and durability of a glove is dependent on usage (e.g. frequency and duration of contact, other chemicals which may be handled, chemical resistance of glove material and dexterity). Always seek advice of the glove supplier as to the most suitable glove material.

**Skin and body protection:** Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

**Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment. Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the applicable exposure limit(s) of

SDS Name: Kalama\* Cinnamic Alcohol, FCC

any chemical substance listed in this SDS.

**Further information:** Eyewash fountains and safety showers are recommended in the work area.

**Environmental exposure controls:** See Sections 6 and 12.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties:

<b>Form:</b>	Crystalline mass (solid)	<b>pH:</b>	4.7 (1% solution)
<b>Appearance:</b>	White to slight yellow	<b>Relative density:</b>	1.044 (25°C)
<b>Odour:</b>	Floral	<b>Partition coefficient (n-octanol/water):</b>	1.452 (OECD 117)
<b>Odour threshold:</b>	Not Available	<b>% Volatile by weight:</b>	100%
<b>Solubility in water:</b>	2542 mg/L @ 25°C	<b>VOC:</b>	100%
<b>Evaporation rate:</b>	<1	<b>Boiling point °C:</b>	234 °C
<b>Vapour pressure:</b>	0.358 Pa @ 25 °C	<b>Boiling point °F:</b>	453 °F
<b>Vapour density:</b>	4.6 (Air=1)	<b>Flash point:</b>	>93.3 °C (>200 °F) Pensky-Marten Closed Cup
<b>Viscosity:</b>	27.449 mm <sup>2</sup> /s @ 40°C; 14.482 mPa.s @ 40°C	<b>Autoignition temperature:</b>	Not Available
<b>Melting point/Freezing point:</b>	31 °C (88 °F) (solidification point)	<b>Flammability (solid, gas):</b>	Not flammable
<b>Oxidising properties:</b>	Not oxidizing	<b>Flammability or explosive limits:</b>	LFL/LEL: Not Available UFL/UEL: Not Available
<b>Explosive properties:</b>	Not explosive	<b>Surface tension:</b>	42.6 mN/m @ 20°C (calculated)
<b>Decomposition temperature:</b>	Not Available		

### 9.2. Other information:

Amounts specified are typical and do not represent a specification.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity:

Oxidizes when exposed to air.

### 10.2. Chemical stability:

This product is stable.

### 10.3. Possibility of hazardous reactions:

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid:

Avoid exposure to air, moisture, ignition sources and elevated temperatures.

### 10.5. Incompatible materials:

Avoid contact with strong oxidizing agents.

### 10.6. Hazardous decomposition products:

Carbon dioxide and carbon monoxide.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects:

#### Information on likely routes of exposure:

**General:** Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

**Eyes:** Solid particles on the eye (powder/dust) may cause pain and be accompanied by irritation.

**Skin:** May cause allergic skin reaction. Causes skin irritation.

**Inhalation:** Dust inhalation may cause respiratory irritation. Chronic exposure may cause headache, dizziness, tiredness, nausea and vomiting.

**Ingestion:** May be harmful if swallowed. Ingestion may cause irritation.

**Acute toxicity information:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Inhalation LC50</u>	<u>Species</u>	<u>Oral LD50</u>	<u>Species</u>	<u>Dermal LD50</u>	<u>Species</u>
Cinnamyl alcohol	N/E	N/E	2675 mg/kg	Mouse	>5000 mg/kg	Rabbit/ adult
Cinnamaldehyde	757 mg/L (4 hours, vapor, estimated)	Rat/ adult	2220 mg/kg	Rat/ adult	1160 mg/kg	Guinea Pig/ adult

**Skin corrosion/irritation:** Causes skin irritation - Category 2.

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Cinnamyl alcohol	Irritant	Guinea pig/ adult
Cinnamaldehyde	Moderate irritant	Rabbit/ adult

**Serious eye damage/irritation:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Cinnamyl alcohol	Non-irritant	Rabbit & Guinea Pig
Cinnamaldehyde	Moderate irritant	Rabbit/ adult

**Respiratory or skin sensitization:** Skin sensitization - Category 1.

<u>Chemical Name</u>	<u>Skin sensitisation</u>	<u>Species</u>
Cinnamyl alcohol	Sensitizer	Guinea pig and Human
Cinnamaldehyde	Sensitizer	Guinea Pig/ adult

**Carcinogenicity:** Not classified (no relevant information found).

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). CINNAMYL ALCOHOL: Negative results were observed in Ames tests with and without activation (in-vitro). Ames testing showed no mutagenic activity and mixed results both positive (at doses approaching cytotoxic levels) and negative were observed from other in-vitro genotoxicity assays. The weight of the evidence indicates this material is not mutagenic or clastogenic.

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). CINNAMYL ALCOHOL: Reproductive toxicity, oral study in rats: NOAEL (no-observed adverse-effect-level) = 535 mg/kg bw/day. Developmental toxicity oral study, rats: NOAEL, developmental toxicity=53.5 mg/kg bw/day.

**Specific target organ toxicity (STOT) - single exposure:** Not classified (based on available data, the classification criteria are not met).

**Specific target organ toxicity (STOT) - repeated exposure:** Not classified (based on available data, the classification criteria are not met). CINNAMYL ALCOHOL: Repeated dose study, oral, 4 months, rat: NOAEL (no-observed-adverse-effect-level) = 53.5 mg/kg bw/day (no adverse effects observed). Additional animal study data: Repeated dose study, oral, 17 weeks, rat: LOAEL (Lowest-Observed-Adverse-Effect-Level) = 6366 mg/kg bw/day (blood (changes in serum composition) and biochemical (enzyme) effects were observed); READ-ACROSS (trans-cinnamaldehyde): Repeated dose study, oral, 14 weeks: NOAEL (rat) = 275-300 mg/kg bw/day, NOAEL (mouse) = 625-650 mg/kg bw/day.

**Aspiration hazard:** Not classified (based on available data, the classification criteria are not met).

**Other toxicity information:** No additional information available.

## SECTION 12: Ecological information

### 12.1. Toxicity:

<u>Chemical Name</u>	<u>Species</u>	<u>Acute</u>	<u>Acute</u>	<u>Chronic</u>
Cinnamyl alcohol	Fish	LC50 9 mg/L (96 hours)	LC50 4.15 mg/L(96 hours)	N/E
Cinnamyl alcohol	Invertebrates	EC50 7.7 mg/L (48 hours)	N/E	N/E
Cinnamyl alcohol	Algae	EC50 19.7 mg/L (72 hours)	N/E	N/E
Cinnamyl alcohol	Micro-organisms	IC50 161.27 mg/L (48 hours) (population growth rate)		
Cinnamaldehyde	Fish	LC50 >3.5 mg/L (96 hours)	LC100 2.35-3.93 mg/L(24 hours)	N/E
Cinnamaldehyde	Invertebrates	EC50 1.20-7.05 mg/L (48 hours)	EC50 3.1 mg/L(24 hours)	N/E
Cinnamaldehyde	Algae	EC50 6.87 mg/L (72 hours)	EC50 7.55 mg/L(96 hours)	N/E
Cinnamaldehyde	Micro-organisms	EC50 71 mg/L (3 hours)		

## 12.2. Persistence and degradability:

<u>Chemical Name</u>	<u>Biodegradation</u>
Cinnamyl alcohol	Readily biodegradable (OECD 301C)
Cinnamaldehyde	Readily biodegradable (weight of evidence)

## 12.3. Bioaccumulative potential:

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Cinnamyl alcohol	4.989 L/kg (calculated)	1.452 (OECD 117)
Cinnamaldehyde	8.3 (estimated)	1.83 @ 27°C

## 12.4. Mobility in soil:

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Cinnamyl alcohol	116.9 (log KOC=2.068)
Cinnamaldehyde	29.456 L/kg @ 20°C (estimated)

## 12.5. Results of PBT and vPvB assessment:

This product does not meet the PBT and vPvB classification criteria.

## 12.6. Other adverse effects:

No additional information available.

# SECTION 13: Disposal considerations

## 13.1. Waste treatment methods:

Dispose of unused contents (incineration or landfill) in accordance with national and local regulations. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate.

See Section 8 for recommendations on the use of personal protective equipment.

# SECTION 14: Transport information

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

14.1. UN number: N/A

## 14.2. UN proper shipping name:

Not regulated - See Bill of Lading for Details

## 14.3. Transport hazard class(es):

U.S. DOT hazard class: N/A  
Canada TDG hazard class: N/A  
Europe ADR/RID hazard class: N/A  
IMDG Code (ocean) hazard class: N/A  
ICAO/IATA (air) hazard class: N/A

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

14.4. Packing group: N/A

## 14.5. Environmental hazards:

Marine pollutant: Not Applicable  
Hazardous substance (USA): Not Applicable

## 14.6. Special precautions for user:

Not Applicable

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

Not Applicable

## SECTION 15: Regulatory information

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

**Europe REACH (EC) 1907/2006:** Applicable components are registered, exempt or otherwise compliant. REACH is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials has met its obligations under the REACH regulation. REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACH obligations, depending on their place in the supply chain. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

**EU Authorizations and/or restrictions on use:** Not Applicable

**Other EU information:** No Additional Information

**National regulations:** No Additional Information

#### Chemical inventories:

<u>Regulation</u>	<u>Status</u>
Australian Inventory of Chemical Substances (AICS):	Y
Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
China Inventory of Existing Chemical Substances (IECSC):	Y
European EC Inventory (EINECS, ELINCS, NLP):	Y
Japan Existing and New Chemical Substances (ENCS):	Y
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	Y
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Y
Taiwan Inventory of Existing Chemicals:	Y
U.S. Toxic Substances Control Act (TSCA) (Active):	Y

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

### 15.2. Chemical safety assessment:

A chemical safety assessment has been carried out for the substance or mixture.

## SECTION 16: Other information

#### Hazard (H) Statements in the Composition section (Section 3):

H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

**Reason for revision:** Changes in Section(s): 1, Annex

**Evaluation method for classification of mixtures:** Not Applicable (substance)

#### Legend:

\* : Trademark owned by Emerald Performance Materials, LLC.

ACGIH: American Conference of Governmental Industrial Hygienists

EU OELV: European Union Occupational Exposure Limit Value

EU IOELV: European Union Indicative Occupational Exposure Limit Value

N/A: Not Applicable

N/E: None Established

STEL: Short Term Exposure Limit

TWA: Time Weighted Average (exposure for 8-hour workday)

#### Users Responsibility/Disclaimer of Liability:

The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.



Safety Data Sheet Preparer:  
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## Annex

### Exposure Scenarios

#### Substance information:

Name of substance: Cinnamyl alcohol.  
EC# 203-212-3 / CAS# 104-54-1.  
REACH Registration number: 01-2119934496-29-0003

#### List of exposure scenarios:

ES1: Use at industrial sites - Industrial end-use of washing and cleaning products  
ES2: Use at industrial sites - Use in pharma application  
ES3: Use at industrial sites - Use as a laboratory chemical  
ES4: Use at industrial sites - Use as an intermediate  
ES5: Formulation - Formulation of fragrance compounds  
ES6: Formulation - Formulation of fragrance products  
ES7: Formulation - Formulation of fragranced end-products  
ES8: Use by professional workers - Professional use of polishes and wax blends  
ES9: Use by professional workers - Professional end-use of washing and cleaning products  
ES10: Consumer use - Consumer end-use of biocides  
ES11: Consumer use - Consumer end-use of cosmetics  
ES12: Consumer use - Consumer end-use of washing and cleaning products  
ES13: Consumer use - Consumer end-use of fragrances  
ES14: Consumer use - Consumer end-use of air care products  
ES15: Consumer use - Consumer end-use of polishes and wax blends

#### General remarks:

The environmental exposure assessments have been performed using EUSES 2.1.2 which is part of Chemical Safety Assessment and Reporting tool (CHESAR v3.2).

The worker exposure assessments have been performed using TRA Worker v3 which is part of Chemical Safety Assessment and Reporting tool (CHESAR v3.2).

The Consumer TRA v3 (R15) tool has been used to estimate consumer exposures.

### Exposure scenario (1): Use at industrial sites - Industrial end-use of washing and cleaning products

#### 1. Exposure scenario (1)

##### Short title of the exposure scenario:

Use at industrial sites - Industrial end-use of washing and cleaning products

##### List of use descriptors:

Product category (PC): PC35  
Process category (PROC): PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13.  
Environmental release category (ERC): ERC4

##### List of names of contributing worker scenarios and corresponding PROCs:

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.  
PROC4 Chemical production where opportunity for exposure arises.  
PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.  
PROC7 Industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.  
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.  
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

SDS Name: Kalama\* Cinnamic Alcohol, FCC

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC13 Treatment of articles by dipping and pouring.

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC35 Washing and cleaning products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Industrial use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: - PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC13: Basic general ventilation (1-3 air changes per hour): 0%. - PROC7: Good general ventilation (3-5 air changes per hour): 30%. Local exhaust ventilation: - PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC13: Not required. - PROC7: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC2, PROC4, PROC5, PROC8b: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC7, PROC8a, PROC10, PROC13: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC2: No (Effectiveness Dermal: 0%). - PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). - PROC7, PROC10: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (Effectiveness Dermal: 95%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,02 ton/day. Maximum annual use at a site: 5 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).

**Other given operational conditions affecting environmental exposure:**

Indoor use.  
 Industrial use.  
 Release fraction to air from process (initial release): 0,01; (final release): 0,01. Local release rate: 0,2 kg/day.  
 Release fraction to wastewater from process (initial release): 0,01; (final release): 0,01. Local release rate: 0,2 kg/day.  
 Release fraction to soil from process: 0,05.

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:**

Dry sludge application to agricultural soil: Yes (default).

**Conditions and measures related to municipal sewage treatment plant:**

Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%).  
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

**Conditions and measures related to external treatment of waste for disposal:**

External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste:**

External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:**

All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	2,143 mg/kg bw/day	0,857	PROC7
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC13
Worker, long-term, systemic	Combined routes	N/A	0,968	PROC7

**Environment**

Information for contributing scenario (2): ERC4

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00129 mg/L	0,168	
Freshwater sediment	0,02 mg/kg dw	0,167	
Marine water	0,000129 mg/L	0,167	
Marine water sediment	0,00197 mg/kg dw	0,167	
Soil	0,00428 mg/kg dw	0,225	
Man via environment	0,0000383 mg/m3 / 0,000262 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels. Indoor use, PROC7: LEV used. Duration: <=8 hours/day. Respiratory protection: PROC2, PROC4, PROC5, PROC8b: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC7, PROC8a, PROC10, PROC13: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC2: No (Effectiveness Dermal: 0%). PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). PROC7, PROC10: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (Effectiveness Dermal: 95%). Concentration of substance: Up to 100%.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (2): Use at industrial sites - Use in pharma application**

**1. Exposure scenario (2)**

**Short title of the exposure scenario:**

Use at industrial sites - Use in pharma application

**List of use descriptors:**

Sector of use category (SU): SU4, SU9, SU24

Product category (PC): PC29

Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9

Environmental release category (ERC): ERC4

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC29 Pharmaceuticals.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Industrial use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC1: Not required. - PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%). - PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:**

Generally accepted standards of occupational hygiene are maintained.  
 Minimisation of manual phases/work tasks.  
 Minimisation of splashes and spills.  
 Avoidance of contact with contaminated tools and objects.  
 Regular cleaning of equipment and work area.  
 Training staff on good practice.  
 Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.

<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,02 ton/day. Maximum annual use at a site: 5 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Industrial use. Release fraction to air from process (initial release): 0,01; (final release): 0,01. Local release rate: 0,2 kg/day. Release fraction to wastewater from process (initial release): 0,01; (final release): 0,01. Local release rate: 0,2 kg/day. Release fraction to soil from process: 0,05.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:</b>	Dry sludge application to agricultural soil: Yes (default).
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PROC5, PROC8a, PROC8b, PROC9  
 Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.  
 Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC9
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC5, PROC8a, PROC8b, PROC9
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC9

**Environment**

Information for contributing scenario (2): ERC4  
 Assessment method: EUSES 2.1.2.  
 Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00129 mg/L	0,168	
Freshwater sediment	0,02 mg/kg dw	0,167	
Marine water	0,000129 mg/L	0,167	
Marine water sediment	0,00197 mg/kg dw	0,167	
Soil	0,00428 mg/kg dw	0,225	
Man via environment	0,0000383 mg/m3 / 0,000262 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

#### 4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

**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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC1: Not required. PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%). PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Exposure scenario (3): Use at industrial sites - Use as a laboratory chemical

##### 1. Exposure scenario (3)

**Short title of the exposure scenario:**

Use at industrial sites - Use as a laboratory chemical

**List of use descriptors:**

Sector of use category (SU): SU9

Product category (PC): PC21

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

Environmental release category (ERC): ERC6b

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**

ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article).

**Further explanations:**

PC21 Laboratory chemicals.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

#### 2. Conditions of use affecting exposure

##### 2.1 Control of workers exposure

**General:** Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.

**Product characteristics:** Concentration of substance: Up to 100%.

Physical state: liquid.

Vapour pressure: 0.358 Pa at 25 °C

**Amounts used:** This information is not relevant for assessment of worker's exposure.

**Frequency and duration of use/exposure:** Duration: <=8 hours/day.

<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Industrial use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC1: Not required. - PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). - PROC4, PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.

**2.2 Control of environmental exposure**

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,015 ton/day. Maximum annual use at a site: 5 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Industrial use. Release fraction to air from process (initial release): 0,001; (final release): 0,001. Local release rate: 0,015 kg/day. Release fraction to wastewater from process (initial release): 0,05; (final release): 0,05. Local release rate: 0,75 kg/day. Release fraction to soil from process: 0,00025.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:</b>	Dry sludge application to agricultural soil: Yes (default).
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC4, PROC9

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC4, PROC9

**Environment**

Information for contributing scenario (2): ERC6b

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00474 mg/L	0,615	
Freshwater sediment	0,072 mg/kg dw	0,614	
Marine water	0,000474 mg/L	0,615	
Marine water sediment	0,00724 mg/kg dw	0,614	
Soil	0,016 mg/kg dw	0,827	
Man via environment	0,000004 mg/m3 / 0,00024 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

<b>Health:</b>	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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC1: Not required. PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). PROC4, PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.
<b>Environment:</b>	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (4): Use at industrial sites - Use as an intermediate****1. Exposure scenario (4)****Short title of the exposure scenario:**

Use at industrial sites - Use as an intermediate

**List of use descriptors:**

Product category (PC): PC0

Process category (PROC): PROC1, PROC2, PROC5, PROC8b, PROC15

Environmental release category (ERC): ERC6a

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**

ERC6a Use of intermediate.

**Further explanations:**

PC0 Other.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).**2. Conditions of use affecting exposure****2.1 Control of workers exposure**



<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Industrial use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC1: Not required. - PROC2, PROC5, PROC8b, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). Dermal protection: - PROC1, PROC2, PROC15: No (Effectiveness Dermal: 0%). - PROC5, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.

### 2.2 Control of environmental exposure

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,02 ton/day. Maximum annual use at a site: 5 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Industrial use. Indoor use. Release fraction to air from process (initial release): 0,05; (final release): 0,05. Local release rate: 1 kg/day. Release fraction to wastewater from process (initial release): 0,02; (final release): 0,02. Local release rate: 0,4 kg/day. Release fraction to soil from process: 0,001.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:</b>	Dry sludge application to agricultural soil: Yes (default).
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

### 3. Exposure estimation and reference to its source

#### Health

Information for contributing scenario (1): PROC5, PROC8b, PROC15

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,371 mg/kg bw/day	0,548	PROC5, PROC8b
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC5, PROC8b, PROC15
Worker, long-term, systemic	Combined routes	N/A	0,866	PROC5, PROC8b

**Environment**

Information for contributing scenario (2): ERC6a

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00254 mg/L	0,33	
Freshwater sediment	0,039 mg/kg dw	0,33	
Marine water	0,000254 mg/L	0,33	
Marine water sediment	0,00389 mg/kg dw	0,33	
Soil	0,00852 mg/kg dw	0,449	
Man via environment	0,000191 mg/m3 / 0,00115 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC1: Not required. PROC2, PROC5, PROC8b, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). Dermal protection: PROC1, PROC2, PROC15: No (Effectiveness Dermal: 0%). PROC5, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (5): Formulation - Formulation of fragrance compounds****1. Exposure scenario (5)****Short title of the exposure scenario:**

Formulation - Formulation of fragrance compounds

**List of use descriptors:**

Product category (PC): PC28

Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15

Environmental release category (ERC): ERC2

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**

ERC2 Formulation into mixture.

**Further explanations:**

PC28 Perfumes, fragrances.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure****2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC1: Not required. - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). - PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,03 ton/day. Maximum annual use at a site: 10 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Release fraction to air from process (initial release): 0,025; (final release): 0,025. Local release rate: 0,75 kg/day. Release fraction to wastewater from process (initial release): 0,02; (final release): 0,02. Local release rate: 0,6 kg/day. Release fraction to soil from process: 0,0001.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:</b>	Dry sludge application to agricultural soil: Yes (default).
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:**

All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PROC5, PROC8a, PROC8b, PROC9, PROC15

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC9
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC5, PROC8a, PROC8b, PROC9, PROC15
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC9

**Environment**

Information for contributing scenario (2): ERC2

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,0038 mg/L	0,493	
Freshwater sediment	0,058 mg/kg dw	0,492	
Marine water	0,00038 mg/L	0,493	
Marine water sediment	0,0058 mg/kg dw	0,492	
Soil	0,013 mg/kg dw	0,668	
Man via environment	0,000191 mg/m3 / 0,00122 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES****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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC1: Not required. PROC2, PROC3, PROC5, PROC8b, PROC9, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). PROC9: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.

**Environment:**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (6): Formulation - Formulation of fragrance products****1. Exposure scenario (6)****Short title of the exposure scenario:**

Formulation - Formulation of fragrance products

**List of use descriptors:**

Product category (PC): PC28

Process category (PROC): PROC2, PROC4, PROC5, PROC8b, PROC15

Environmental release category (ERC): ERC2

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.  
 PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

**Further explanations:**

PC28 Perfumes, fragrances.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure****2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). Dermal protection: - PROC2, PROC15: No (Effectiveness Dermal: 0%). - PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,03 ton/day. Maximum annual use at a site: 10 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Release fraction to air from process (initial release): 0,025; (final release): 0,025. Local release rate: 0,75 kg/day. Release fraction to wastewater from process (initial release): 0,02; (final release): 0,02. Local release rate: 0,6 kg/day. Release fraction to soil from process: 0,0001.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:</b>	Dry sludge application to agricultural soil: Yes (default).
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:**

All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PROC4, PROC5, PROC8b, PROC15

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC4
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC4, PROC5, PROC8b, PROC15
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC4

**Environment**

Information for contributing scenario (2): No Information

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,0038 mg/L	0,493	
Freshwater sediment	0,058 mg/kg dw	0,492	
Marine water	0,00038 mg/L	0,493	
Marine water sediment	0,0058 mg/kg dw	0,492	
Soil	0,013 mg/kg dw	0,668	
Man via environment	0,000191 mg/m3 / 0,00122 mg/kg bw/day	<0.01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES****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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). Dermal protection: PROC2, PROC15: No (Effectiveness Dermal: 0%). PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.

**Environment:**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (7): Formulation - Formulation of fragranced end-products****1. Exposure scenario (7)****Short title of the exposure scenario:**

Formulation - Formulation of fragranced end-products

**List of use descriptors:**

Product category (PC): PC28

Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Environmental release category (ERC): ERC2

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

SDS Name: Kalama\* Cinnamic Alcohol, FCC

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC14 Tableting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**

ERC2 Formulation into mixture.

**Further explanations:**

PC28 Perfumes, fragrances.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Advanced.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC1: Not required. - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). - PROC9, PROC14: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Maximum daily use at a site: 0,03 ton/day. Maximum annual use at a site: 10 tons/year.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18,000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Release fraction to air from process (initial release): 0,025; (final release): 0,025. Local release rate: 0,75 kg/day. Release fraction to wastewater from process (initial release): 0,02; (final release): 0,02. Local release rate: 0,6 kg/day. Release fraction to soil from process: 0,0001.

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:**

Dry sludge application to agricultural soil: Yes (default).

**Conditions and measures related to municipal sewage treatment plant:**

Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%).  
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

**Conditions and measures related to external treatment of waste for disposal:**

External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste:**

External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:**

All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC9
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC9

**Environment**

Information for contributing scenario (2): ERC2

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,0038 mg/L	0,493	
Freshwater sediment	0,058 mg/kg dw	0,492	
Marine water	0,00038 mg/L	0,493	
Marine water sediment	0,0058 mg/kg dw	0,492	
Soil	0,013 mg/kg dw	0,668	
Man via environment	0,000191 mg/m3 / 0,00122 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC1: Not required. PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC1, PROC2, PROC3, PROC15: No (Effectiveness Dermal: 0%). PROC9, PROC14: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.

**Environment:**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (8): Use by professional workers - Professional use of polishes and wax blends**

**1. Exposure scenario (8)**

**Short title of the exposure scenario:**

Use by professional workers - Professional use of polishes and wax blends



**List of use descriptors:**

Product category (PC): PC31  
 Process category (PROC): PROC2, PROC8a, PROC9, PROC10.  
 Environmental release category (ERC): ERC8a

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.  
 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.  
 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.  
 PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC31 Polishes and wax blends.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: - PROC2, PROC8a, PROC9: Up to 100%. - PROC10: <=10%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Professional use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: - PROC2, PROC9: Not required. - PROC8a, PROC10: Yes (80% effectiveness). Occupational Health and Safety Management System: Basic.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC2: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a, PROC9, PROC10: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC2: No (Effectiveness Dermal: 0%). - PROC8a, PROC9, PROC10: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.

**2.2 Control of environmental exposure**

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.

<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Professional use. Indoor use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: 0,0.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PROC2, PROC9, PROC10

Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic	Dermal	1,646 mg/kg bw/day	0,658	PROC10
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC2, PROC9
Worker, long-term, systemic	Combined routes	N/A	0,866	PROC2

**Environment**

Information for contributing scenario (2): ERC8a

Assessment method: EUSES 2.1.2.

Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES****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 equivalent levels. Indoor use, PROC8a, PROC10: LEV used. Duration: <=8 hours/day. Respiratory protection: PROC2: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a, PROC9, PROC10: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC2: No (Effectiveness Dermal: 0%). PROC8a, PROC9, PROC10: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: PROC2, PROC8a, PROC9: Up to 100%. PROC10: <=10%.

**Environment:**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (9): Use by professional workers - Professional end-use of washing and cleaning products****1. Exposure scenario (9)**

**Short title of the exposure scenario:**

Use by professional workers - Professional end-use of washing and cleaning products

**List of use descriptors:**

Product category (PC): PC35

Process category (PROC): PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC13

Environmental release category (ERC): ERC8a, ERC8d

**List of names of contributing worker scenarios and corresponding PROCs:**

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Chemical production where opportunity for exposure arises.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC13 Treatment of articles by dipping and pouring.

**Name of contributing environmental scenario and corresponding ERCs:**

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

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

**Further explanations:**

PC35 Washing and cleaning products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).**2. Conditions of use affecting exposure****2.1 Control of workers exposure**

<b>General:</b>	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately.
<b>Product characteristics:</b>	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	This information is not relevant for assessment of worker's exposure.
<b>Frequency and duration of use/exposure:</b>	Duration: <=8 hours/day.
<b>Other given operational conditions affecting workers exposure:</b>	Location: Indoor use. Domain: Professional use. Process temperature: <= 40 °C.
<b>Technical conditions and measures to control dispersion from source towards the worker:</b>	General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Not required. Occupational Health and Safety Management System: Basic.
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b>	Respiratory protection: - PROC2, PROC4, PROC5, PROC8b: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). - PROC8a, PROC13: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: - PROC2: No (Effectiveness Dermal: 0%). - PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). - PROC5, PROC8a, PROC8b, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
<b>2.2 Control of environmental exposure</b>	
<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C

<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Professional use. Indoor/Outdoor use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: - ERC8a: 0,00. - ERC8d: 0,20.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PROC4, PROC5, PROC8a, PROC8b, PROC13  
 Assessment method: CHESAR v3.2-Worker TRA v3. Only highest figures are presented here.  
 Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic	Dermal	1,372 mg/kg bw/day	0,549	PROC4
Worker, long-term, systemic	Inhalation	2,795 mg/m3	0,318	PROC4, PROC5, PROC8a, PROC8b, PROC13
Worker, long-term, systemic	Combined routes	N/A	0,867	PROC4

**Environment**

Information for contributing scenario (2): ERC8a, ERC8d  
 Assessment method: EUSES 2.1.2.  
 Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

<b>Health:</b>	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 equivalent levels. Indoor use, without LEV. Duration: <=8 hours/day. Respiratory protection: PROC2, PROC4, PROC5, PROC8b: Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). PROC8a, PROC13: Yes (Respirator with APF of 20) (Effectiveness Inhalation: 95%). Dermal protection: PROC2: No (Effectiveness Dermal: 0%). PROC4: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%). PROC5, PROC8a, PROC8b, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%). Concentration of substance: Up to 100%.
<b>Environment:</b>	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (10): Consumer use - Consumer end-use of biocides****1. Exposure scenario (10)****Short title of the exposure scenario:**

Consumer use - Consumer end-use of biocides

**List of use descriptors:**

Product category (PC): PC8

Environmental release category (ERC): ERC8a, ERC8d

**Name of contributing environmental scenario and corresponding ERCs:**

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

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

**Further explanations:**

PC8 Biocidal products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure****2.1 Control of consumer exposure**

<b>Product characteristics:</b>	Concentration of substance in product: Up to 0,01%. Physical state: liquid. Oral contact foreseen: No. Spray: No.
<b>Amounts used:</b>	Applied amounts for each use event: 50 g.
<b>Frequency and duration of use/exposure:</b>	Duration covers exposure up to: 8 hours/event. Frequency - covers use frequency: up to 1 time/day.
<b>Human factors not influenced by risk management:</b>	Body parts potentially exposed: Whole body. Inhalation factor = 1. Dermal transfer factor = 1.
<b>Other given operational conditions affecting consumers exposure:</b>	Location: Indoor use. Body weight: 60 kg.

**2.2 Control of environmental exposure**

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor/Outdoor use. Consumer use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: - ERC8a: 0,00. - ERC8d: 0,20.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PC8

Assessment method: TRA Consumer v3.1 (R15).

Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,000431 mg/m3	<0,01	
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0,01	
Consumer, long-term, systemic	Combined routes	N/A	0,327	

**Environment**

Information for contributing scenario (2): ERC8a, ERC8d

Assessment method: EUSES 2.1.2.

Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (11): Consumer use - Consumer end-use of cosmetics****1. Exposure scenario (11)****Short title of the exposure scenario:**

Consumer use - Consumer end-use of cosmetics

**List of use descriptors:**

Product category (PC): PC39

Environmental release category (ERC): ERC8a

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC39 Cosmetics, personal care products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).**2. Conditions of use affecting exposure****2.1 Control of consumer exposure**

<b>Product characteristics:</b>	Concentration of substance in product: Up to 0,01%. Physical state: liquid. Oral contact foreseen: Yes. Spray: No.
<b>Amounts used:</b>	Applied amounts for each use event: 50 g.
<b>Frequency and duration of use/exposure:</b>	Duration covers exposure up to: 8 hours/event. Frequency - covers use frequency: up to 1 time/day.
<b>Human factors not influenced by risk management:</b>	Body parts potentially exposed: Whole body. Inhalation factor = 1. Dermal transfer factor = 1. Oral transfer factor = 1. Volume of product swallowed: <= 10.0 cm3.
<b>Other given operational conditions affecting consumers exposure:</b>	Location: Indoor use. Body weight: 60 kg.

**2.2 Control of environmental exposure**

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Consumer use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: 0,0.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PC39  
Assessment method: TRA Consumer v3.1 (R15).  
Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,000431 mg/m3	<0,01	
Consumer, long-term, systemic	Oral	0,017 mg/kg bw/day	0,019	
Consumer, long-term, systemic	Combined routes	N/A	0,346	

**Environment**

Information for contributing scenario (2): ERC8a  
Assessment method: EUSES 2.1.2.  
Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

#### 4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

<b>Health:</b>	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 equivalent levels.
<b>Environment:</b>	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Exposure scenario (12): Consumer use - Consumer end-use of washing and cleaning products

##### 1. Exposure scenario (12)

###### Short title of the exposure scenario:

Consumer use - Consumer end-use of washing and cleaning products

###### List of use descriptors:

Product category (PC): PC35

Environmental release category (ERC): ERC8d

###### Name of contributing environmental scenario and corresponding ERCs:

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

###### Further explanations:

PC35 Washing and cleaning products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

##### 2. Conditions of use affecting exposure

###### 2.1 Control of consumer exposure

<b>Product characteristics:</b>	Concentration of substance in product: Up to 0,01%. Physical state: liquid. Oral contact foreseen: No. Spray: No.
<b>Amounts used:</b>	Applied amounts for each use event: 50 g.
<b>Frequency and duration of use/exposure:</b>	Duration covers exposure up to: 8 hours/event. Frequency - covers use frequency: up to 1 time/day.
<b>Human factors not influenced by risk management:</b>	Body parts potentially exposed: Whole body. Inhalation factor = 1. Dermal transfer factor = 1.
<b>Other given operational conditions affecting consumers exposure:</b>	Location: Indoor use. Body weight: 60 kg.

###### 2.2 Control of environmental exposure

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Outdoor use. Consumer use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: 0,20.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).



<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PC35

Assessment method: TRA Consumer v3.1 (R15).

Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,000431 mg/m3	<0,01	
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0,01	
Consumer, long-term, systemic	Combined routes	N/A	0,327	

**Environment**

Information for contributing scenario (2): ERC8d

Assessment method: EUSES 2.1.2.

Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (13): Consumer use - Consumer end-use of fragrances****1. Exposure scenario (13)****Short title of the exposure scenario:**

Consumer use - Consumer end-use of fragrances

**List of use descriptors:**

Product category (PC): PC28

Environmental release category (ERC): ERC8a

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC28 Perfumes, fragrances.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

**2. Conditions of use affecting exposure****2.1 Control of consumer exposure**

**Product characteristics:** Concentration of substance in product: Up to 0,01%.  
Physical state: liquid.  
Oral contact foreseen: No.  
Spray: Yes.

<b>Amounts used:</b>	Applied amounts for each use event: 50 g.
<b>Frequency and duration of use/exposure:</b>	Duration covers exposure up to: 8 hours/event. Frequency - covers use frequency: up to 1 time/day.
<b>Human factors not influenced by risk management:</b>	Body parts potentially exposed: Whole body. Inhalation factor = 1. Dermal transfer factor = 1.
<b>Other given operational conditions affecting consumers exposure:</b>	Location: Indoor use. Body weight: 60 kg.

## 2.2 Control of environmental exposure

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m3/day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Consumer use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: 0,0.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

## 3. Exposure estimation and reference to its source

### Health

Information for contributing scenario (1): PC28  
Assessment method: TRA Consumer v3.1 (R15).  
Exposure estimation:

	<b>Route</b>	<b>Exposure estimate</b>	<b>RCR</b>	<b>Notes</b>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,043 mg/m3	0,033	
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0,01	
Consumer, long-term, systemic	Combined routes	N/A	0,36	

### Environment

Information for contributing scenario (2): ERC8a  
Assessment method: EUSES 2.1.2.  
Exposure estimation:

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Man via environment	0,00000019 mg/m <sup>3</sup> / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

#### 4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

<b>Health:</b>	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 equivalent levels.
<b>Environment:</b>	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

#### Exposure scenario (14): Consumer use - Consumer end-use of air care products

##### 1. Exposure scenario (14)

###### Short title of the exposure scenario:

Consumer use - Consumer end-use of air care products

###### List of use descriptors:

Product category (PC): PC3

Environmental release category (ERC): ERC8a

###### Name of contributing environmental scenario and corresponding ERCs:

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

###### Further explanations:

PC3 Air care products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).

##### 2. Conditions of use affecting exposure

###### 2.1 Control of consumer exposure

<b>Product characteristics:</b>	Concentration of substance in product: Up to 0,01%. Physical state: liquid. Oral contact foreseen: No. Spray: Yes.
<b>Amounts used:</b>	Applied amounts for each use event: 50 g.
<b>Frequency and duration of use/exposure:</b>	Duration covers exposure up to: 8 hours/event. Frequency - covers use frequency: up to 1 time/day.
<b>Human factors not influenced by risk management:</b>	Body parts potentially exposed: Whole body. Inhalation factor = 1. Dermal transfer factor = 1.
<b>Other given operational conditions affecting consumers exposure:</b>	Location: Indoor use. Body weight: 60 kg.

###### 2.2 Control of environmental exposure

<b>General:</b>	All risk management measures utilised must also comply with all relevant local regulations.
<b>Product characteristics:</b>	Vapour pressure: 0.358 Pa at 25 °C
<b>Amounts used:</b>	Daily wide dispersive use: 0.0000027 tons/day. Amounts used in the EU: 5 tons/year.
<b>Frequency and duration of use:</b>	Wide dispersive use.
<b>Environmental factors not influenced by risk management:</b>	Flow rate of receiving surface water: >=18000 m <sup>3</sup> /day (default).
<b>Other given operational conditions affecting environmental exposure:</b>	Indoor use. Consumer use. Release fraction to air from process (initial release): 1,00; (final release): 1,00. Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00. Local release rate: 0,00275 kg/day. Release fraction to soil from process: 0,0.
<b>Conditions and measures related to municipal sewage treatment plant:</b>	Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%). Size of municipal sewage system/treatment plant: >=2000 m <sup>3</sup> /day (standard town).

<b>Conditions and measures related to external treatment of waste for disposal:</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b>Conditions and measures related to external recovery of waste:</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:</b>	All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source****Health**

Information for contributing scenario (1): PC3

Assessment method: TRA Consumer v3.1 (R15).

Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,043 mg/m3	0,033	
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0,01	
Consumer, long-term, systemic	Combined routes	N/A	0,36	

**Environment**

Information for contributing scenario (2): ERC8a

Assessment method: EUSES 2.1.2.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,000055 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	
Man via environment	0,00000019 mg/m3 / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

**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 equivalent levels.

**Environment:** Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

**Exposure scenario (15): Consumer use - Consumer end-use of polishes and wax blends****1. Exposure scenario (15)****Short title of the exposure scenario:**

Consumer use - Consumer end-use of polishes and wax blends

**List of use descriptors:**

Product category (PC): PC31

Environmental release category (ERC): ERC8a

**Name of contributing environmental scenario and corresponding ERCs:**

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

**Further explanations:**

PC31 Polishes and wax blends.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system ([http://guidance.echa.europa.eu/docs/guidance\\_document/information\\_requirements\\_r12\\_en.pdf](http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf)).**2. Conditions of use affecting exposure****2.1 Control of consumer exposure**

**Product characteristics:** Concentration of substance in product: Up to 0,01%.  
 Physical state: liquid.  
 Oral contact foreseen: No.  
 Spray: No.

**Amounts used:** Applied amounts for each use event: 50 g.

**Frequency and duration of use/exposure:** Duration covers exposure up to: 8 hours/event.  
 Frequency - covers use frequency: up to 1 time/day.

**Human factors not influenced by risk management:** Body parts potentially exposed: Whole body.  
 Inhalation factor = 1.  
 Dermal transfer factor = 1.

**Other given operational conditions affecting consumers exposure:** Location: Indoor use.  
 Body weight: 60 kg.

**2.2 Control of environmental exposure**

**General:** All risk management measures utilised must also comply with all relevant local regulations.

**Product characteristics:** Vapour pressure: 0.358 Pa at 25 °C

**Amounts used:** Daily wide dispersive use: 0.0000027 tons/day.  
 Amounts used in the EU: 5 tons/year.

**Frequency and duration of use:** Wide dispersive use.

**Environmental factors not influenced by risk management:** Flow rate of receiving surface water: >=18000 m3/day (default).

**Other given operational conditions affecting environmental exposure:** Indoor use.  
 Consumer use.  
 Release fraction to air from process (initial release): 1,00; (final release): 1,00.  
 Release fraction to wastewater from process (initial release): 1,00; (final release): 1,00.  
 Local release rate: 0,00275 kg/day.  
 Release fraction to soil from process: 0,0.

**Conditions and measures related to municipal sewage treatment plant:** Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87,47%).  
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

**Conditions and measures related to external treatment of waste for disposal:** External treatment and disposal of waste should comply with applicable local and/or national regulations.

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

**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:** All risk management measures utilised must also comply with all relevant local regulations.

**3. Exposure estimation and reference to its source**

**Health**

Information for contributing scenario (1): PC31  
 Assessment method: TRA Consumer v3.1 (R15).  
 Exposure estimation:

	<u>Route</u>	<u>Exposure estimate</u>	<u>RCR</u>	<u>Notes</u>
Consumer, long-term, systemic	Dermal	0,292 mg/kg bw/day	0,327	
Consumer, long-term, systemic	Inhalation	0,000431 mg/m3	<0,01	
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0,01	
Consumer, long-term, systemic	Combined routes	N/A	0,327	

**Environment**

Information for contributing scenario (2): ERC8a  
 Assessment method: EUSES 2.1.2.  
 Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,0000555 mg/L	<0,01	
Freshwater sediment	0,000849 mg/kg dw	<0,01	
Marine water	0,0000053 mg/L	<0,01	
Marine water sediment	0,000081 mg/kg dw	<0,01	
Soil	0,000155 mg/kg dw	<0,01	

<b>Compartment</b>	<b>PEC</b>	<b>RCR</b>	<b>Notes</b>
Man via environment	0,00000019 mg/m <sup>3</sup> / 0,00000395 mg/kg bw/day	<0,01 / <0,01	Inhalation / Oral
Man via environment-Combined routes	N/A	<0,01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

**4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**

<b>Health:</b>	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 equivalent levels.
<b>Environment:</b>	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.