# Safety Data Sheet
## according to UK REACH Regulations SI 2020/1577

Revision date: 2021-10-18

Supercedes: 2021-09-30

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

**1.1. Product identifier:**

| | |
|---|---|
| **Product trade name:** | Kalama* Azuril |
| **Company product number:** | AZURIL |
| **UK REACH registration number:** | UK-01-1118640654-9-0001 |
| **Substance name:** | Reaction mass of 3-(4-methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile and 4-(4-methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile |
| **Substance identification number:** | EC 915-371-2 |
| **Other means of identification:** | 32150 |

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

| | |
|---|---|
| **Uses:** | Fragrance ingredient. Industrial applications. Professional applications. Consumer applications. See Annex for covered uses. |
| **Uses advised against:** | None identified |

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

| | |
|---|---|
| **Manufacturer/Supplier:** | Emerald Kalama Chemical Limited<br>Dans Road<br>Widnes, Cheshire WA8 0RF<br>United Kingdom<br>Telephone: +44 (0) 151 423 8000 |
| **For further information about this SDS:** | Email: product.compliance@emeraldmaterials.com |

**1.4. Emergency telephone number:**

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA).

## SECTION 2: Hazards identification

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

**Product classification according to GB CLP as amended:**

Hazardous to the aquatic environment, Chronic, category 2, H411

See Section 2.2 for full text of H (Hazard) statements.

**2.2. Label elements:**

**Product labeling according to GB CLP as amended:**

**Hazard pictogram(s):**

**Signal word:** Not Applicable

**Hazard statements:**

H411 Toxic to aquatic life with long lasting effects.

**Precautionary statements:**

P273 Avoid release to the environment.

P391 Collect spillage.

**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 GB CLP 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:**

| CAS-No. | Chemical Name | Weight% | Classification | H Statements |
|---|---|---|---|---|
| See Notes | Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | 100 | Aquatic Chronic 2 | H411 |

| CAS-No. | Chemical Name | Weight% | UK REACH Registration No. | EC/List Number |
|---|---|---|---|---|
| See Notes | Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | 100 | UK-01-1118640654-9-0001 | 915-371-2 |

See Section 16 for full text of H (Hazard) statements.

**Notes:** AZURIL: Reaction mass of 3-(4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile (CAS# 68084-04-8) and 4-(4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile (CAS# 21690-43-7).

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:** Wash the affected area thoroughly with plenty of soap and water. Get medical attention if symptoms occur.

**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:** Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

**Unsuitable:** Do not use direct water stream. May spread fire.

**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. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

**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. Eliminate ignition sources.

**6.2. Environmental precautions:**

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

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

Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder 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. Do not cut, puncture, or weld on or near the container. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye contact. Avoid repeated or prolonged skin contact. Avoid inhalation of aerosol, mist, spray, fume or vapor. 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. Do not reuse empty container without commercial cleaning or reconditioning. Empty container contains residual product which may exhibit hazards of product.

**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):**

| Chemical Name | ACGIH - TWA/Ceiling | ACGIH - STEL |
|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl) cyclohex-3-ene-1-carbonitrile | N/E | N/E |

| Chemical Name | UK WEL |
|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl) cyclohex-3-ene-1-carbonitrile | N/E |

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

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

**Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile**

| Compartment | PNEC |
|---|---|
| Freshwater | 0,0015 mg/L |
| Freshwater sediment | 0,246 mg/kg dw |
| Marine water | 0,00015 mg/L |
| Marine water sediment | 0,025 mg/kg dw |
| Intermittent releases | 0,015 mg/L |
| Soil | 0,055 mg/kg dw |
| STP | 1 mg/L |
| 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 spray, aerosol, fume, mist and vapor 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 240 minutes (protection class 5 or greater) are recommended. For brief contact or splash applications, gloves with breakthrough times of 10 minutes or greater are recommended (protection class 1 or greater). The protective gloves to be used must comply with the specifications of the 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:** Respiratory protection is not needed with proper ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

**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:**

| | |
|---|---|
| **Appearance:** | Liquid. Clear yellow |
| **Odour:** | Characteristic |
| **Odour threshold:** | Not Available |
| **pH:** | Not Available |
| **Melting point/Freezing point:** | -20°C (-4°F) @ 101.3 kPa |
| **Initial boiling point and boiling range °C:** | 297 °C @ 101.3 kPa |
| **Initial boiling point and boiling range °F:** | 567 °F @ 101.3 kPa |
| **Flash point:** | 136 °C (277 °F) ASTM D 6450 |
| **Evaporation rate:** | Not Available |
| **Flammability (solid, gas):** | Not Applicable (liquid) |
| **Upper/lower flammability or explosive limits:** | LFL/LEL: Not Available<br>UFL/UEL: Not Available |
| **Vapour pressure:** | 0.27 Pa (20°C) |
| **Vapour density:** | Not Available |
| **Relative density:** | 0.918-0.928 (20°C) |
| **Solubility in water:** | 19.12 mg/L (20°C) |
| **Partition coefficient (n-octanol/water):** | 4.3 (OECD 117) |
| **Autoignition temperature:** | 346°C (655°F) @ 1013 hPa |
| **Decomposition temperature:** | Not Available |
| **Viscosity:** | Not Available |
| **Explosive properties:** | Not explosive |
| **Oxidising properties:** | Not oxidizing |
| **% Volatile By weight:** | Not Available |
| **VOC:** | Not Available |
| **Surface tension:** | 60.74 mN/m @ 20°C |

**9.2. Other information:**

Amounts specified are typical and do not represent a specification.

## SECTION 10: Stability and reactivity

**10.1. Reactivity:**

None known.

**10.2. Chemical stability:**

This product is stable.

**10.3. Possibility of hazardous reactions:**

Hazardous polymerization will not occur.

**10.4. Conditions to avoid:**

Excessive heat and ignition sources.

**10.5. Incompatible materials:**

Avoid contact with strong oxidizing agents.

**10.6. Hazardous decomposition products:**

Carbon monoxide, carbon dioxide, and oxides of nitrogen.

## 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:** May cause eye irritation.

**Skin:** Repeated or prolonged skin contact may cause irritation.

**Inhalation:** High airborne concentrations of vapors resulting from heating, misting or spraying may cause irritation of the respiratory tract and mucous membranes.

**Ingestion:** Ingestion may cause irritation.

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

| Chemical Name | Inhalation LC50 | Species | Oral LD50 | Species | Dermal LD50 | Species |
|---|---|---|---|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | N/E | N/E | >2000 mg/kg | Rat/ adult female | N/E | N/E |

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

| Chemical Name | Skin irritation | Species |
|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Non-irritant (OECD 431 & 439) | In-Vitro |

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

| Chemical Name | Eye irritation | Species |
|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Non-irritant (OECD 438) | In-Vitro |

**Respiratory or skin sensitization:** Not classified (based on available data, the classification criteria are not met).

| Chemical Name | Skin sensitisation | Species |
|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Non-sensitizer | Local Lymph Node Assay (OECD 429) |

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

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). AZURIL: In vitro testing showed no mutagenic activity (OECD 471, OECD 487, OECD 490).

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). AZURIL: Reproductive toxicity, oral study in rats: NOAEL (no-observed adverse-effect-level) 1000 mg/kg bw/day (OECD 422). Developmental toxicity oral study, rats: NOAEL, developmental toxicity=1000 mg/kg bw/day (OECD 422).

**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). AZURIL: Repeated dose study, oral, rats (OECD 422): NOAEL (no-observed-adverse-effect-level)=250 mg/kg bw/day (male), 1000 mg/kg bw/day (female) (systemic effects).

**Aspiration hazard:** Not classified (no relevant information found).

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

## SECTION 12: Ecological information

**12.1. Toxicity:**

| Chemical Name | Species | Acute | Acute | Chronic |
|---|---|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Fish | LC50 3.9 mg/L (96 hours) (geometric mean measured) | N/E | N/E |
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Invertebrates | EC50 1.5 mg/L (48 hours) (geometric mean measured) | N/E | N/E |
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Algae | EC50 1.6 mg/L (72 hours) (geometric mean measured) | N/E | NOEC 0.39 mg/L(72 hours) (geometric mean measured) |
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Micro-organisms | NOEC 10 mg/L (3 hours) | | |

**12.2. Persistence and degradability:**

Not readily biodegradable; Inherently biodegradable (OECD 301F).

| Chemical Name | Biodegradation |
|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | Inherently biodegradable (OECD 301F) |

**12.3. Bioaccumulative potential:**

Log Pow: 4.3 (OECD 117).

| Chemical Name | Bioconcentration Factor (BCF) | Log Kow |
|---|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | N/E | 4.3 (OECD 117) |

**12.4. Mobility in soil:**

KOC=1819 (OECD 121).

| Chemical Name | Mobility in soil (Koc/Kow) |
|---|---|
| Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile | 1819 (20°C, OECD 121) |

**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) 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:** UN3082

**14.2. UN proper shipping name:**

Environmentally hazardous substance, liquid, n.o.s. (Reaction mass of (3- and 4-) (4-Methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile)

**14.3. Transport hazard class(es):**

**U.S. DOT hazard class:** N/A
**Canada TDG hazard class:** 9
**Europe ADR/RID hazard class:** 9
**IMDG Code (ocean) hazard class:** 9
**ICAO/IATA (air) hazard class:** 9

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

**14.4. Packing group:** III

**14.5. Environmental hazards:**

**Marine pollutant:** Marine Pollutant (IMDG code 2.9.3).

**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**

**STATUTORY INSTRUMENTS 2020 No. 1577, The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 [UK REACH]:** Applicable components have been registered, are exempt or otherwise compliant. UK REACH is only relevant to substances either manufactured or imported into the UK. Emerald Kalama Chemical has met its obligations under the UK REACH regulation. UK REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing UK REACH obligations, depending on their place in the supply chain. Emerald's compliance with UK REACH does not imply automatic coverage for Downstream Users located in the UK. For material manufactured outside of the UK, the importer of record must understand and meet their specific obligations under the regulation.

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

**Other UK information:** No Additional Information

**Chemical inventories:**

| Regulation | Status |
|---|---|
| Australian Inventory of Industrial Chemicals (AIIC): | N |
| Canadian Domestic Substances List (DSL): | N |
| Canadian Non-Domestic Substances List (NDSL): | Y |
| China Inventory of Existing Chemical Substances (IECSC): | Y |
| European EC Inventory (EINECS, ELINCS, NLP): | Y |
| Japan Existing and New Chemical Substances (ENCS): | N |
| Japan Industrial Safety and Health Law (ISHL): | N |
| Korean Existing and Evaluated Chemical Substances (KECL): | N |
| New Zealand Inventory of Chemicals (NZIoC): | N |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS): | N |
| 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.

**Europe REACH (EC) 1907/2006:** Applicable components are registered, exempt or otherwise compliant. EU REACH is only relevant to substances either manufactured or imported into the EU. Emerald Kalama Chemical has met its obligations under the EU REACH regulation. EU REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing EU REACH obligations, depending on their place in the supply chain. Emerald's compliance with EU REACH does not imply automatic coverage for Downstream Users located in the EU. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

**15.2. Chemical safety assessment:**

A chemical safety assessment has been carried out for the substance or mixture consistent with the EU REACH regulation.

## SECTION 16: Other information

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

H411 Toxic to aquatic life with long lasting effects.

**Reason for revision:** Changes in Section(s): 14

**Evaulation method For classification Of mixtures:** Not Applicable (substance)

**Legend:**

* : Trademark owned by Emerald Kalama Chemical, LLC.
ACGIH: American Conference of Governmental Industrial Hygienists
ATE: Acute toxicity estimate
N/A: Not Applicable
N/E: None Established
STEL: Short Term Exposure Limit
TWA: Time Weighted Average (exposure for 8-hour workday)
UK WEL: United Kingdom Workplace Exposure Limits

**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:
Product Compliance Department
Emerald Kalama Chemical, LLC
1499 SE Tech Center Place, Suite 300
Vancouver, WA 98683
United States

# Annex

## Exposure Scenarios

**Substance information:**

Name of substance: Reaction mass of 3-(4-methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile and 4-(4-methyl-3-pentenyl)cyclohex-3-ene-1-carbonitrile.
EC# 915-371-2
UK REACH Registration number: UK-01-1118640654-9-0001
EU REACH Registration number: 01-2120864906-40-0000

**List of exposure scenarios:**

ES1: Formulation - Formulation of fragrance compounds
ES2: Formulation - Formulation of fragranced end-products
ES3: Use at industrial sites - Industrial end-use of washing and cleaning products.
ES4: Use by professional workers - Professional end-use of washing and cleaning products
ES5: Use by professional workers - Professional end-use of polishes and wax blends.
ES6: Consumer use - Consumer end-use of washing and cleaning products
ES7: Consumer use - Consumer end-use of air care products
ES8: Consumer use - Consumer end-use of biocides
ES9: Consumer use - Consumer end-use of polishes and wax blends
ES10: Consumer use - Consumer end-use of cosmetics

**General remarks:**

The first tier environmental exposure assessments have at first instance been performed using EUSES v2.1.2 which is part of Chemical Safety Assessment and Reporting tool version 3.4 (CHESAR v3.4). Higher tier assessments have been performed if safe use was not demonstrated using first tier assessments. In these cases Specific Environmental Release Categories (SpERCs) have been used or release fractions have been defined according to the A&B-tables in Appendix 1 of the 2003 Technical Guidance Document on Risk Assessment (EU TGD 2003), Part II.

This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

Reference: IFRA REACH Exposure scenarios for Fragrance Substances. Version 2.1/11 December 2012.

### Exposure scenario (1): Formulation - Formulation of fragrance compounds

**1. Exposure scenario (1)**

**Short title of the exposure scenario:**
Formulation - Formulation of fragrance compounds

**List of use descriptors:**
Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC15
Environmental release category (ERC): ERC2 (SpERC IFRA 2.1a.v1)

**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 laboratory (< 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**
ERC2 Formulation into mixture.
SpERC IFRA 2.1(a): Formulation of fragrance compounds at large/medium sites.

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). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Maximum daily use at a site: 0,12 ton/day.
Maximum annual use at a site: 30 tons/year.

**Frequency and duration of use:**
Emission days: <=250 days/year.

**Environmental factors not influenced by risk management:**
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): 0,00025; (final release): 0,00025. Local release rate: 0,03 kg/day (SpERC IFRA 2.1a.v1).
Release fraction to wastewater from process (initial release): 0,00002; (final release): 0,000002. Local release rate: 0,0024 kg/day (SpERC IFRA 2.1a.v1).
Release fraction to soil from process (final release): 0,0001.

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:**
Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release).
Dry sludge application to agricultural soil: Yes (default).

**Conditions and measures related to municipal sewage treatment plant:**
Municipal Sewage Treatment Plant (STP): Yes (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.
General good practice: Trained staff, spill protection including waste reuse.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,00013 mg/L | 0,087 | |
| Freshwater sediment | 0,024 mg/kg dw | 0,098 | |
| Marine water | 0,000013 mg/L | 0,086 | |
| Marine water sediment | 0,00241 mg/kg dw | 0,098 | |
| Soil | 0,00144 mg/kg dw | 0,026 | |
| STP | 0,000952 mg/L | <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**

**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): Formulation - Formulation of fragranced end-products

**1. Exposure scenario (2)**

**Short title of the exposure scenario:**
Formulation - Formulation of fragranced end-products

**List of use descriptors:**
Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
Environmental release category (ERC): ERC2 (SpERC AISE 2.1g.v2).

**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.
PROC14 Tabletting, 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 laboratory (< 1 l or 1 kg present at workplace).

**Name of contributing environmental scenario and corresponding ERCs:**
ERC2 Formulation into mixture.
SpERC AISE 2.1g.v2: Formulation of liquid Detergents/Maintenance Products: Low Viscosity (large site).

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). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Maximum daily use at a site: 0,12 ton/day.
Maximum annual use at a site: 30 tons/year.

**Frequency and duration of use:**
Emission days: <=250 days/year.

**Environmental factors not influenced by risk management:**
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): 0,0; (final release): 0,0. Local release rate: 0 kg/day (EU TGD (2003) Table A2.1).
Release fraction to wastewater from process (initial release): 0,0001; (final release): 0,0001. Local release rate: 0,012 kg/day (EU TGD 2003 Table A2.1).
Release fraction to soil from process (final release): 0,0 (EU TGD 2003 Table A2.1).
Type of process: Substance applied in aqueous process solution with negligible volatilization.

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:**
Dry sludge application to agricultural soil: Yes (default).
Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release).
Equipment cleaning: Equipment cleaning with minimized emissions to wastewater.

**Conditions and measures related to municipal sewage treatment plant:**
Municipal Sewage Treatment Plant (STP): Yes (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.
General good practice: Trained staff, spill protection including waste reuse.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000509 mg/L | 0,34 | |
| Freshwater sediment | 0,094 mg/kg dw | 0,384 | |
| Marine water | 0,0000509 mg/L | 0,34 | |
| Marine water sediment | 0,00945 mg/kg dw | 0,384 | |
| Soil | 0,00709 mg/kg dw | 0,13 | |
| STP | 0,00476 mg/L | <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**

**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 - Industrial end-use of washing and cleaning products

### 1. Exposure scenario (3)

**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, PROC7, PROC8a, PROC8b, PROC10, PROC13
Environmental release category (ERC): ERC4 (SpERC AISE 4.1.v2)

**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.
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.
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).
SpERC AISE 4.1.v2: Industrial Use of Water Borne Processing Aids.

**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). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

### 2. Conditions of use affecting exposure

#### 2.1 Control of workers exposure

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

#### 2.2 Control of environmental exposure

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Maximum daily use at a site: 0,0000033 ton/day.
Maximum annual use at a site: 6 tons/year.

**Frequency and duration of use:**
Emission days: <=220 days/year.

**Environmental factors not influenced by risk management:**
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): 0,0; (final release): 0,0. Local release rate: 0 kg/day (SpERC AISE 4.1.v2).
Release fraction to air from process (initial release): 1,00; (final release): 1,00.
Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day (SpERC AISE 4.1.v2).
Type of process: Substance applied in aqueous process solution with negligible volatilization.

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:**
Dry sludge application to agricultural soil: Yes (default).
Chemical waste - discontinuous and continuous generation: Spent fluid discharged to wastewater.

**Conditions and measures related to municipal sewage treatment plant:**
Municipal Sewage Treatment Plant (STP): Yes (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0,031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00217 mg/kg dw | 0,04 | |
| STP | 0,00131 mg/L | <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**

**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 (4): Use by professional workers - Professional end-use of washing and cleaning products

**1. Exposure scenario (4)**

**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, PROC8a, PROC8b, PROC10, PROC11, 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.
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.
PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.
PROC11 Non 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.
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).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
Wide dispersive use.

**Environmental factors not influenced by risk management:**
Flow rate of receiving surface water: >=18,000 m3/day (default).

**Other given operational conditions affecting environmental exposure:**
Indoor/Outdoor use.
Professional use.
Release fraction to air from process (initial release): 1,00; (final release): 1,00.
Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release):
- ERC8a: 0,00.
- ERC8d: 0,20.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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): Use by professional workers - Professional end-use of polishes and wax blends

**1. Exposure scenario (5)**

**Short title of the exposure scenario:**
Use by professional workers - Professional end-use of polishes and wax blends

**List of use descriptors:**
Product category (PC): PC31
Process category (PROC): PROC2, PROC8a, PROC10, PROC11
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.
PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.
PROC11 Non 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.

**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).

**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
Wide dispersive use.

**Environmental factors not influenced by risk management:**

Flow rate of receiving surface water: >=18,000 m3/day (default).

**Other given operational conditions affecting environmental exposure:**
Indoor use.
Professional use.
Release fraction to air from process (initial release): 1,00; (final release): 1,00.
Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release): 0,0.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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): Consumer use - Consumer end-use of washing and cleaning products

**1. Exposure scenario (6)**

**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): 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:**
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).

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
Wide dispersive use.

**Environmental factors not influenced by risk management:**
Flow rate of receiving surface water: >=18,000 m3/day (default).

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

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): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release):
- ERC8a: 0,00.
- ERC8d: 0,20.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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): Consumer use - Consumer end-use of air care products

**1. Exposure scenario (7)**

**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).

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
Wide dispersive use.

**Environmental factors not influenced by risk management:**
Flow rate of receiving surface water: >=18,000 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): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release): 0,0.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0,031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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): Consumer use - Consumer end-use of biocides

**1. Exposure scenario (8)**

**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 (e.g. Disinfectants, pest control).

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).

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
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/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): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release):
- ERC8a: 0,00.
- ERC8d: 0,20.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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): Consumer use - Consumer end-use of polishes and wax blends

**1. Exposure scenario (9)**

**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).

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
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): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.

Release fraction to soil from process (final release): 0,0.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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 (10): Consumer use - Consumer end-use of cosmetics

**1. Exposure scenario (10)**

**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).

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**
This substance is not classified for human health end-points therefore a human health risk assessment was not conducted.

**2.2 Control of environmental exposure**

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

**Product characteristics:**
Physical state: liquid.
Vapour pressure: 0,27 Pa at 20 °C

**Amounts used:**
Daily wide dispersive use: 0,0000033 tons/day.

**Frequency and duration of use:**
Emission days: <=365 days/year.
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): 1.0; (final release): 1.0. Local release rate: 0,0033 kg/day.
Release fraction to soil from process (final release): 0,0.

**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 (Effectiveness Water: 20,70%).
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:**
All risk management measures utilised must also comply with all relevant local regulations.

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

Assessment method-Environment: CHESAR v3.4 - EUSES v2.1.2.

**Environment**

| Effect/Compartment | Exposure estimate/PEC | RCR | Notes |
|---|---|---|---|
| Freshwater | 0,000165 mg/L | 0,11 | |
| Freshwater sediment | 0.031 mg/kg dw | 0,125 | |
| Marine water | 0,0000165 mg/L | 0,11 | |
| Marine water sediment | 0,00307 mg/kg dw | 0,125 | |
| Soil | 0,00196 mg/kg dw | 0,036 | |
| STP | 0,00131 mg/L | <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**

**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.