

# Safety Data Sheet

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



Revision date: 1/21/2022  
Supersedes date: 7/22/2020

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

### 1.1. Product identifier:

**Product trade name:** Kalama\* Benzyl Alcohol Technical  
**Company product number:** BZALCTECH  
**REACH registration number:** 01-2119492630-38-0021  
**Substance name:** Benzyl alcohol  
**Substance identification number:** EC 202-859-9; EC index number: 603-057-00-5  
**Other means of identification:** Benzene methanol; Phenylcarbinol; alpha-Hydroxytoluene; Phenylmethanol; (Hydroxymethyl)benzene; alpha-Toluenol

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

**Uses:** Intermediate. Odour agent. Laboratory chemical. Photosensitive agent and other photochemical. Solvent. Viscosity adjuster. Flow improver. See Annex for covered uses. Industrial applications. Professional applications. Consumer applications.  
**Uses advised against:** None identified

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

**Manufacturer/Supplier:** Emerald Kalama Chemical, LLC  
1296 NW Third Street  
Kalama, WA 98625 United States  
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**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 Regulation (EC) 1272/2008 (CLP) as amended:

Acute Toxicity, Oral, category 4 , H302  
Eye Irritation, category 2, H319  
Acute Toxicity, Inhalation, category 4 , H332  
See Section 2.2 for full text of H (Hazard) statements (EC 1272/2008).

### 2.2. Label elements:

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

##### Hazard pictogram(s):



**Signal word:**  
Warning

**Hazard statements:**

H302 Harmful if swallowed.  
 H319 Causes serious eye irritation.  
 H332 Harmful if inhaled.

**Precautionary statements:**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
 P264 Wash skin thoroughly after handling.  
 P280 Wear eye protection/face protection.  
 P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.  
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P312 Call a POISON CENTRE/doctor if you feel unwell.  
 P337+P313 If eye irritation persists: Get medical advice/attention.

**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.  
**Endocrine disrupting properties:** No specific information available.  
**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>
0000100-51-6	Benzyl alcohol	99-100	Acute Tox. 4 Inhalation- Acute Tox. 4 Oral- Eye Irrit. 2	H302-319-332
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>REACH Registration No.</u>	<u>EC/List Number</u>	
0000100-51-6	Benzyl alcohol	01-2119492630-38-0021	202-859-9	
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>M-factor</u>	<u>SCLs</u>	<u>ATE</u>
0000100-51-6	Benzyl alcohol	N/A	N/E	Oral ATE 1620 mg/kg

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.

**Following eye contact:** Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If eye irritation persists: Get medical advice/attention.

**Following 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.

**Following 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.

**Following 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:**

Dizziness, Drowsiness, Headache, Irritation, Nausea. Preexisting sensitization, skin and/or respiratory disorders or diseases may be aggravated. 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:** 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. Product can form a flammable vapor/air mixture at temperatures at or above the flash point. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

**Hazardous combustion products:** Irritating or toxic substances will 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. Personal Protective Equipment must be worn.

### 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. Do not breathe dust, vapor, aerosol, mist or gas. Do not ingest, taste, or swallow. 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. 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. Shelf life: 24 months. Avoid storage in aluminum or iron containers. Empty container contains residual product which may exhibit hazards of product. Product can easily oxidize. It is recommended that opened containers be padded with nitrogen. Protect from light.

### 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):**

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

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

### Derived No Effect Levels (DNELs):

#### Benzyl 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	NE	110 mg/m3	N/E	22 mg/m3
Workers	Dermal	N/E	40 mg/kg bw/day	N/E	8 mg/kg bw/day
General population	Inhalation	N/E	27 mg/m3	N/E	5,4 mg/m3
General population	Dermal	N/E	20 mg/kg bw/day	N/E	4 mg/kg bw/day
General population	Oral	N/E	20 mg/kg bw/day	N/E	4 mg/kg bw/day
Human via the environment	Inhalation	N/E	N/E	N/E	5,4 mg/m3
Human via the environment	Oral	N/E	N/E	N/E	4 mg/kg bw/day

### Predicted No Effect Concentration (PNECs):

#### Benzyl alcohol

<u>Compartment</u>	<u>PNEC</u>
Freshwater	1 mg/L
Freshwater sediment	5,27 mg/kg dw
Marine water	0,1 mg/L
Marine water sediment	0,527 mg/kg dw
Intermittent releases	2,3 mg/L
Soil	0,456 mg/kg dw
STP	39 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:** Safety glasses or goggles required.

**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). Suggested materials for protective gloves: Butyl rubber, PVC, Fluorocarbon rubber, Viton, Nitrile/Chloroprene 2 layer. Incompatible materials: neoprene / natural rubber / nitrile. The protective gloves to be used must comply with the specifications of the Regulation (EU) 2016/425 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 any chemical substance listed in this SDS. Gas mask with filter Type A.

**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>Physical state:</b>	Liquid
<b>Colour:</b>	Colorless
<b>Odour:</b>	Slight aromatic
<b>Odour threshold:</b>	Not Available
<b>Melting point/Freezing point:</b>	-15.4- -15.3 °C (4.3-4.5 °F)
<b>Boiling point °C:</b>	205 °C @ 1013 hPa
<b>Boiling point °F:</b>	401.5 °F @ 1013 hPa
<b>Flammability:</b>	Not flammable
<b>Lower and upper explosion limit:</b>	LEL: 1.3%

	UEL: 13%
<b>Flash point:</b>	99-100 .4 °C (210-212.7 °F) Closed Cup
<b>Auto-ignition temperature:</b>	436 °C (817 °F)
<b>Decomposition temperature:</b>	Not Available
<b>pH:</b>	Not Available
<b>Kinematic viscosity:</b>	5.6-7.6 mm <sup>2</sup> /s (5.8-8 cP) @ 20°C
<b>Solubility in water:</b>	40 g/L @ 25°C
<b>Partition coefficient n-octanol/water (log value):</b>	1.05 @ 20°C
<b>Vapour pressure:</b>	7 Pa @ 20 °C
<b>Density and/or relative density:</b>	1.045 @ 25 °C
<b>Relative vapour density:</b>	3.7 (Air=1)
<b>Particle characteristics:</b>	Not Applicable
<b>% Volatile by weight:</b>	100%
<b>VOC:</b>	100%
<b>Surface tension:</b>	39 mN/m @ 20°C (1g/L)

Amounts specified are typical and do not represent a specification.

## 9.2. Other information:

### Information with regard to physical hazard classes:

Explosive properties: Not explosive  
Oxidising properties: Not oxidizing

### Other safety characteristics:

Evaporation rate: < 0.01

## SECTION 10: Stability and reactivity

### 10.1. Reactivity:

Can react violently in contact with strong oxidizing agents, isocyanates, acetaldehyde, lithium aluminum hydride, aluminum alkyl compounds, strong mineral acids (i.e. sulfuric acid), and hydrogen bromide.

### 10.2. Chemical stability:

This product is stable. In the presence of air, benzyl alcohol will very slowly oxidize to benzaldehyde.

### 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 strong acids and oxidizing agents. Avoid contact with iron and aluminum. Will attack some form of plastics.

### 10.6. Hazardous decomposition products:

Carbon dioxide and carbon monoxide. Benzaldehyde.

## SECTION 11: Toxicological information

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

**Acute toxicity:** Harmful if inhaled - Category 4. Harmful if swallowed - Category 4.

<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>
Benzyl alcohol	>4178 mg/m <sup>3</sup> (4 hours, aerosol)	Rat/ adult	1620 mg/kg	Rat/ adult male	N/E	N/E

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

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Benzyl alcohol	Non-irritant (OECD 404)	Rabbit/ adult

**Serious eye damage/irritation:** Causes serious eye irritation - Category 2.

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Benzyl alcohol	Irritant (OECD 405)	Rabbit/ adult

**Respiratory or skin sensitization:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: This material has a low potential to cause allergic skin reactions, however cases of skin sensitization have been

reported.

**Chemical Name**  
Benzyl alcohol

**Skin sensitisation**  
Non-sensitizer

**Species**  
Weight of evidence

**Carcinogenicity:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: Under conditions of a two-year NTP gavage study, there was no evidence of carcinogenic activity for rats or mice receiving 200 or 400 mg/kg bw/day.

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). BENZYL ALCOHOL: Ames testing showed no mutagenic activity and mixed results both positive and negative were observed from other in-vitro genotoxicity assays. Benzyl alcohol showed no genotoxicity during in-vivo testing. 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). BENZYL ALCOHOL - READ-ACROSS: Reproductive toxicity (benzoic acid), 4-generation oral study in rats: NOAEL (no-observed adverse-effect-level) of 500 mg/kg/day. Developmental toxicity (sodium benzoate), oral, rats and mice: NOAEL of >=175 mg/kg bw/day can be established for developmental effects. Benzyl alcohol - no effects on reproductive organs were observed in subchronic and long-term studies with rats and mice.

**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). BENZYL ALCOHOL: Long term animal studies indicate a gavage NOAEL (no-observed-adverse-effect-level) >= 400 mg/kg/day for rats and >=200 mg/kg/day for mice. At higher doses, effects on bodyweights, brain lesions, thymus, skeletal muscle, kidneys, liver and central nervous system were observed. In a 4-week inhalation study in rats on Benzyl Alcohol, no adverse effects were observed with a no-observed-adverse-effect level (NOAEC) of 1072 mg/m3.

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

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

**Information on likely routes of exposure:**

**General:** Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure. Overexposure by inhalation or ingestion may cause dizziness, drowsiness, headache, nausea, vomiting, diarrhea, convulsions, central nervous system depression and loss of consciousness.

**Eyes:** Causes serious eye irritation.

**Skin:** May be harmful in contact with skin. Repeated or prolonged contact may cause irritation, dermatitis, defatting and drying or cracking of the skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**Inhalation:** Harmful if inhaled. Inhalation at high vapor concentrations may cause respiratory tract irritation and central nervous effects.

**Ingestion:** Harmful if swallowed. Ingestion may cause nausea, vomiting and diarrhea.

**11.2. Information on other hazards**

**Endocrine disrupting properties:** No specific information available.

**Other 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>
Benzyl alcohol	Fish	LC50 460 mg/L (96 hours)	LC50 >100 mg/L(96 hours)	N/E
Benzyl alcohol	Invertebrates	EC50 230 mg/L (48 hours)	EC50 400 mg/L(24 hours)	NOEC 51 mg/L (21 days)
Benzyl alcohol	Algae	EC50 770 mg/L (72 hours)	N/E	NOEC 310 mg/L(72 hours)
Benzyl alcohol	Micro-organisms	EC50 390 mg/L (24 hours)		

**12.2. Persistence and degradability:**

<u>Chemical Name</u>	<u>Biodegradation</u>
Benzyl alcohol	Readily biodegradable (OECD 301C & 301A)

**12.3. Bioaccumulative potential:**

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Benzyl alcohol	1.37 L/kg (calculated)	1.05 @ 20°C

**12.4. Mobility in soil:**

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Benzyl alcohol	15.7 (calculated)

**12.5. Results of PBT and vPvB assessment:**

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

**12.6. Endocrine disrupting properties:**

No specific information available.

**12.7. 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 or ID 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/ADN 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. Maritime transport in bulk according to IMO instruments**

<u>Chemical Name</u>	<u>IBC Code</u>
Benzyl alcohol	Category Y

**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. 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.

**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>
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<u>Regulation</u>	<u>Status</u>
Australian Inventory of Industrial Chemicals (AIIC):	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.

**UK REACH:** As the UK has formally left the European Union, EU REACH [(EC) 1907/2006] is no longer directly applicable within the UK. Please see UK REACH formatted SDS for information related to UK REACH compliance.

**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):**

H302 Harmful if swallowed.  
 H319 Causes serious eye irritation.  
 H332 Harmful if inhaled.

**Reason for revision:** Changes in Section(s): 1, Annex, Safety data sheet format (Regulation (EU) 2020/878)

**Evaluation 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  
 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  
 SCL: Specific concentration limit  
 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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 United States

**Annex**

**Exposure Scenarios**

**Substance information:**

Name of substance: Benzyl alcohol.  
 EC# 202-859-9 / CAS# 100-51-6  
 REACH Registration number: 01-2119492630-38-0021

**List of exposure scenarios:**

ES1: Formulation of preparations - Industrial  
 ES2: Formulation in materials - Industrial  
 ES3: Formulation of preparations - Professional  
 ES4: Use at industrial sites - Intermediates  
 ES5: Use at industrial sites - Building & Construction/Distributors - Industrial  
 ES6: Use at industrial sites - Adhesives and sealants, coatings and paints, fillers, metal and non-metal surface treatment products, ink and toners



SDS Name: Kalama\* Benzyl Alcohol Technical

- ES7: Use at industrial sites - Lubricants, greases & release products
- ES8: Use at industrial sites - Paper/board dye, finishing/impregnation
- ES9: Use at industrial sites - Photo-chemicals
- ES10: Use at industrial sites - Use in polymer preparations
- ES11: Use at industrial sites - Textile dyes, finishing/impregnation products
- ES12: Use at industrial sites - Washing & cleaning products - Cosmetic & personal care products
- ES13: Use at industrial sites - Industrial use as laboratory reagent
- ES14: Use by professional workers - Professional use - Stripping applications & Epoxy resins (indoor and outdoor)
- ES15: Use by professional workers - Professional use as laboratory reagent
- ES16: Consumer use - Consumer uses
- ES17: Service life (professional worker and consumers) - Wide dispersive indoor use of paper articles - baby wipes

**General remarks:**

The first tier environmental exposure assessments have at first instance been performed using EUSES 2.1.2 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 Technical Guidance Document on Risk Assessment, Part II (2003).

The first tier worker exposure assessments have at first instance been performed using Worker TRA v3 which is part of Chemical Safety Assessment and Reporting tool version 3.4 (CHESAR v3.4). For some worker contributing scenarios worker exposure assessments have been performed using ECETOC TRA version 3 (ECETOC TRA v3) and the Advanced REACH Tool (ART v1.5) (inhalation exposures). The RiskofDerm Tier 2 model was used to refine dermal exposure estimates, if necessary. The most critical hazard assessment conclusions for benzyl alcohol are the available derived no-effect levels (DNELs) for acute and long-term systemic effects via inhalation and dermal route.

Benzyl alcohol is classified with Eye Irrit 2; H319 ("Causing serious eye irritation") and, therefore, the hazard assessment conclusion for benzyl alcohol for effects on eyes is "Low hazard (no threshold derived)". Adequate Risk Management Measures (RMMs) and Operational Conditions (OCs) have to be applied to ensure that low hazard substances can be used safely. Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

For consumers the most critical hazard assessment conclusions for benzyl alcohol are the available derived no-effect levels (DNELs) for acute and long-term systemic effects via inhalation, dermal and oral route. Therefore quantitative assessments regarding acute and long-term systemic inhalation, dermal and oral exposure have been performed. For all consumer contributing scenarios second tier consumer exposure assessments have been performed using ConsExpo v4.1.

**Exposure scenario (1): Formulation of preparations - Industrial**

**1. Exposure scenario (1)**

**Short title of the exposure scenario:**

Formulation of preparations - Industrial

**List of use descriptors:**

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13.

Environmental release category (ERC): ERC2 (SpERC ESVOC 2.2.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.

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.

PROC13 Treatment of articles by dipping and pouring.

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

ERC2 Formulation into mixture.

SpERC ESVOC 2.2.v1 Formulation & (re)packing of substances and mixtures (industrial): solvent-borne.

**Further explanations:**

Formulation of solvent-borne substances encompasses a wide range of activities such as transfers, mixing, tableting, compression, pelletisation and sampling. Substance losses are reduced through use of general and site-specific risk management measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs; and through use of closed or covered equipment/processes to minimize evaporative losses of VOCs. Substance losses to waste water are generally restricted to equipment cleaning as processes operate

without contact with water Such uses and substance properties result in limited to no discharge to wastewater or to soil from the industrial site.

PC0 Other.

PC1 Adhesives, sealants.

PC3 Air care products.

PC8 Biocidal products.

PC9a Coatings and paints, thinners, paint removers.

PC9b Fillers, putties, plasters, modelling clay.

PC14 Metal surface treatment products.

PC15 Non-metal-surface treatment products.

PC18 Ink and toners.

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents.

PC21 Laboratory chemicals.

PC23 Leather treatment products.

PC24 Lubricants, greases, release products.

PC26 Paper and board treatment products.

PC27 Plant protection products.

PC28 Perfumes, fragrances.

PC29 Pharmaceuticals.

PC30 Photo-chemicals.

PC31 Polishes and wax blends.

PC32 Polymer preparations and compounds.

PC34 Textile dyes, and impregnating products.

PC35 Washing and cleaning products.

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)). 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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

#### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

#### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

#### Human factors not influenced by risk management:

Exposed skin surface:

- PROC1, PROC3: 240 cm2 (one hand, face side only).
- PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm2 (two hands, face side only).
- PROC8a, PROC8b: 960 cm2 (two hands).

#### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

#### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC1: Closed system (minimal contact during routine operations).
- PROC2: Closed continuous process with occasional controlled exposure.
- PROC3: Closed batch process with occasional controlled exposure.
- PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.
- PROC5, PROC8a, PROC13: No.

Local exhaust ventilation:

- PROC1, PROC2, PROC3: Not required.
- PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

SDS Name: Kalama\* Benzyl Alcohol Technical

Dermal protection:

- PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).
- PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: 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.

**2.2 Control of environmental exposure**

**General:**

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

On-site wastewater treatment required.

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 16 ton/day.

Maximum annual use at a site: 1600 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 300 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): 0.0025; (final release): 0.00125. Local release rate: 20 kg/day (SpERC ESVOG 2.2.v1).

Release fraction to wastewater from process (initial release): 0.005; (final release): 0.0015. Local release rate: 24 kg/day (SpERC ESVOG 2.2.v1).

Release fraction to soil from process (final release): 0.0001 (SpERC ESVOG 2.2.v1).

**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).

On-site treatment of off-air: Typical measures to maintain workplace concentrations or airborne VOCs and particulates below respective OELS (e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption).

Upgrade of the system in place or additional air treatment measures (Upgrade of the system in place or additional air treatment measures, such as wet scrubber and/or air filtration and/or thermal oxidation and/or vapour recovery systems, in order to achieve a reduction of the air emissions.) (Effectiveness Air: 50%).

On-site treatment of wastewater: Acclimated biological treatment (Effectiveness Water: 70%).

Equipment cleaning: No release to wastewater from process as such, wastewater emissions limited to release generated from final equipment cleaning step using water.

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

Municipal Sewage Treatment Plant (STP): Yes ( Efficiency=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC5, PROC8a, PROC8b, PROC13
Worker, long-term, systemic, Inhalation	13,52 mg/m3	0,614	PROC3
Worker, long-term, systemic, Combined routes	N/A	0,701	PROC3
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC5, PROC8a, PROC8b, PROC13
Worker, short-term, systemic, Inhalation	54,06 mg/m3	0,492	PROC3
Worker, short-term, systemic, Combined routes	N/A	0,509	PROC3

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,156 mg/L	0,156	

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater sediment	0,808 mg/kg dw	0,153	
Marine water	0,016 mg/L	0,156	
Marine water sediment	0,081 mg/kg dw	0,153	
Soil	0,059 mg/kg dw	0,129	
STP	1,516 mg/L	0,039	
Human via environment, Inhalation	0,00163 mg/m3	<0,01	
Human via environment, Oral	0,00365 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC1, PROC2, PROC3: Not required. PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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): Formulation in materials - Industrial

##### 1. Exposure scenario (2)

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

Formulation in materials - Industrial

###### List of use descriptors:

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13.

Environmental release category (ERC): ERC3

###### 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.

PROC13 Treatment of articles by dipping and pouring.

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

ERC3 Formulation into solid matrix.

###### Further explanations:

PC0 Other.

PC1 Adhesives, sealants.

PC3 Air care products.

PC8 Biocidal products.

PC9a Coatings and paints, thinners, paint removers.

PC9b Fillers, putties, plasters, modelling clay.

PC14 Metal surface treatment products.

PC15 Non-metal-surface treatment products.

PC18 Ink and toners.

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents.

PC21 Laboratory chemicals.

PC23 Leather treatment products.

PC24 Lubricants, greases, release products.

PC26 Paper and board treatment products.

PC27 Plant protection products.

PC28 Perfumes, fragrances.

PC29 Pharmaceuticals.

PC30 Photo-chemicals.

PC31 Polishes and wax blends.

SDS Name: Kalama\* Benzyl Alcohol Technical

PC32 Polymer preparations and compounds.  
PC34 Textile dyes, and impregnating products.  
PC35 Washing and cleaning products.  
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 workers exposure

#### General:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

#### Product characteristics:

Concentration of substance in mixture/article: <=100%.  
Physical form of the used product: Liquid.  
Vapour pressure: 25,94 Pa at 40 °C

#### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

#### Human factors not influenced by risk management:

Exposed skin surface:

- PROC1, PROC3: 240 cm2 (one hand, face side only).
- PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm2 (two hands, face side only).
- PROC8a, PROC8b: 960 cm2 (two hands).

#### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

#### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC1: Closed system (minimal contact during routine operations).
- PROC2: Closed continuous process with occasional controlled exposure.
- PROC3: Closed batch process with occasional controlled exposure.
- PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.
- PROC5, PROC8a, PROC13: No.

Local exhaust ventilation:

- PROC1, PROC2, PROC3: Not required.
- PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).
- PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: 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.

### 2.2 Control of environmental exposure

#### General:

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

#### Product characteristics:

Vapour pressure: 7 Pa at 20 °C

#### Amounts used:

Maximum daily use at a site: 2 ton/day.

Maximum annual use at a site: 200 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: &lt;=100 days/year.

**Environmental factors not influenced by risk management:**Flow rate of receiving surface water: >=18,000 m<sup>3</sup>/day (default).**Other given operational conditions affecting environmental exposure:**

Indoor use.

Industrial use.

Release fraction to air from process (initial release): 0,30; (final release): 0,30. Local release rate: 600 kg/day.

Release fraction to wastewater from process (initial release): 0,002; (final release): 0,002. Local release rate: 4 kg/day.

Release fraction to soil from process (final release): 0.001.

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m<sup>3</sup>/day (standard town).**Conditions and measures related to external treatment of waste for disposal:**

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC5, PROC8a, PROC8b, PROC13
Worker, long-term, systemic, Inhalation	13,51 mg/m <sup>3</sup>	0,614	PROC3
Worker, long-term, systemic, Combined routes	N/A	0,701	PROC3
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC5, PROC8a, PROC8b, PROC13
Worker, short-term, systemic, Inhalation	54,06 mg/m <sup>3</sup>	0,492	PROC3
Worker, short-term, systemic, Combined routes	N/A	0,509	PROC3

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,03 mg/L	0,03	
Freshwater sediment	0,155 mg/kg dw	0,029	
Marine water	0,00299 mg/L	0,03	
Marine water sediment	0,015 mg/kg dw	0,029	
Soil	0,025 mg/kg dw	0,054	
STP	0,253 mg/L	<0,01	
Human via environment, Inhalation	0,046 mg/m <sup>3</sup>	<0,01	
Human via environment, Oral	0,049 mg/kg bw/day	0,012	
Human via environment, Combined routes	N/A	0,021	

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, no respirator required. Duration of activity: <=8 hours/day. PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC1, PROC2, PROC3: Not required. PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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): Formulation of preparations - Professional****1. Exposure scenario (3)****Short title of the exposure scenario:**

Formulation of preparations - Professional

**List of use descriptors:**

SDS Name: Kalama\* Benzyl Alcohol Technical

Product category (PC): PC0, PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC19.

Environmental release category (ERC): ERC2

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**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.

PROC13 Treatment of articles by dipping and pouring.

PROC19 Manual activities involving hand contact. Addresses tasks, where exposure of hands and forearms can be expected; no dedicated tools or specific exposure controls other than PPE can be put in place.

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

ERC2 Formulation into mixture.

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**Further explanations:**

PC0 Other.

PC1 Adhesives, sealants.

PC3 Air care products.

PC8 Biocidal products.

PC9a Coatings and paints, thinners, paint removers.

PC9b Fillers, putties, plasters, modelling clay.

PC14 Metal surface treatment products.

PC15 Non-metal-surface treatment products.

PC18 Ink and toners.

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents.

PC21 Laboratory chemicals.

PC23 Leather treatment products.

PC24 Lubricants, greases, release products.

PC26 Paper and board treatment products.

PC27 Plant protection products.

PC28 Perfumes, fragrances.

PC29 Pharmaceuticals.

PC30 Photo-chemicals.

PC31 Polishes and wax blends.

PC32 Polymer preparations and compounds.

PC34 Textile dyes, and impregnating products.

PC35 Washing and cleaning products.

PC39 Cosmetics, personal care products.

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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)).

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**2. Conditions of use affecting exposure**

**2.1 Control of workers exposure**

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**General:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

---

**Product characteristics:**

Concentration of substance in mixture/article:

- PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: <=100%

- PROC19: <=20%

Physical form of the used product: Liquid.

Vapour pressure:

- PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: 25,94 Pa at 40 °C

- PROC19: 7 Pa at 20 °C

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**Frequency and duration of use/exposure:**

Duration of activity:

- PROC1, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC19: <=8 hours/day.

SDS Name: Kalama\* Benzyl Alcohol Technical

- PROC2, PROC8a: <=4 hours/day.

---

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

Exposed skin surface:

- PROC1, PROC3: 240 cm<sup>2</sup> (one hand, face side only).
- PROC2, PROC4, PROC5, PROC9, PROC13: 480 cm<sup>2</sup> (two hands, face side only).
- PROC8a, PROC8b: 960 cm<sup>2</sup> (two hands).
- PROC19: 1980 cm<sup>2</sup> (two hands and forearms).

---

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

Location: Indoor use.

Domain: Professional use.

Process temperature:

- PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: <= 40 °C.
- PROC19: 20 °C.

Assessment tool used:

- PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.
- PROC19: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.

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**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5): PROC19: Activities with open liquid surfaces and open reservoirs - activities with agitated surfaces. Activities with agitated surfaces; open surface 1-3 m<sup>2</sup>. Containment: open process. Process not fully enclosed but demonstrable and effective housekeeping practices in place.

Inhalation exposure model (ART v1.5) - PROC19: covers use in room size of 300 m<sup>3</sup>.

---

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC1: Closed system (minimal contact during routine operations).
- PROC2: Closed continuous process with occasional controlled exposure.
- PROC3: Closed batch process with occasional controlled exposure.
- PROC4, PROC8b, PROC9: Semi-closed process with occasional controlled exposure.
- PROC5, PROC8a, PROC13, PROC19: No.

Local exhaust ventilation:

- PROC1, PROC2, PROC19: Not required.
- PROC3, PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (80% effectiveness).
- PROC8b: Yes (90% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Basic.

---

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC1, PROC3: No (Effectiveness Dermal: 0%).
- PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves conforming to EN374) (Effectiveness Dermal: 80%).
- PROC19: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (Effectiveness Dermal: 95%).

---

**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.

---

**2.2 Control of environmental exposure**

**General:**

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

---

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

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**Amounts used:**

Maximum daily use at a site: 2 ton/day.

Maximum annual use at a site: 200 tons/year.

Percentage of tonnage used at regional scale: 10 %.

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**Frequency and duration of use:**

Emission days: 100 days/year.

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

Flow rate of receiving surface water: >=18,000 m<sup>3</sup>/day (default).

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

Indoor use.

Professional use.

Release fraction to air from process (initial release): 0.025; (final release): 0.025. Local release rate: 50 kg/day.

Release fraction to wastewater from process (initial release): 0.02; (final release): 0.02. Local release rate: 40 kg/day.

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:**



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

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

Municipal Sewage Treatment Plant (STP): Yes (Efficiency=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m<sup>3</sup>/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure. PROC19: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	4,243 mg/kg bw/day	0,53	PROC19
Worker, long-term, systemic, Inhalation	13,51 mg/m <sup>3</sup>	0,614	PROC2, PROC8a
Worker, long-term, systemic, Combined routes	N/A	0,957	PROC8a
Worker, short-term, systemic, Dermal	4,243 mg/kg bw/day	0,106	PROC19
Worker, short-term, systemic, Inhalation	90,11 mg/m <sup>3</sup>	0,819	PROC2, PROC8a
Worker, short-term, systemic, Combined routes	N/A	0,887	PROC8a

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,257 mg/L	0,257	
Freshwater sediment	1,331 mg/kg dw	0,253	
Marine water	0,026 mg/L	0,257	
Marine water sediment	0,133 mg/kg dw	0,252	
Soil	0,092 mg/kg dw	0,202	
STP	2,527 mg/L	0,065	
Human via environment, Inhalation	0,00391 mg/m <sup>3</sup>	<0,01	
Human via environment, Oral	0,00687 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: PROC1, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC19: <=8 hours/day. PROC2, PROC8a: <=4 hours/day. PROC2, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: Yes (chemically resistant gloves conforming) (Effectiveness Dermal: 80%). PROC19: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (Effectiveness Dermal: 95%). Local exhaust ventilation: PROC1, PROC2, PROC19: Not required. PROC3, PROC4, PROC5, PROC8a, PROC9, PROC13: Yes (80% effectiveness). PROC8b: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13: <=100%. PROC19: <=20%.

**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 at industrial sites - Intermediates****1. Exposure scenario (4)****Short title of the exposure scenario:**

Use at industrial sites - Intermediates

**List of use descriptors:**

Sector of use category (SU): SU8, SU9

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

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.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with

SDS Name: Kalama\* Benzyl Alcohol Technical

equivalent containment condition.

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:**

ERC6a Use of intermediate.

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:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

---

**Product characteristics:**

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure:

- PROC1, PROC2, PROC3: 381 Pa at 180 °C
- PROC8b, PROC9: 25,94 Pa at 40 °C

---

**Frequency and duration of use/exposure:**

Duration of activity: <=8 hours/day.

---

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

Exposed skin surface:

- PROC1, PROC3: 240 cm<sup>2</sup> (one hand, face side only).
- PROC2, PROC9: 480 cm<sup>2</sup> (two hands, face side only).
- PROC8b: 960 cm<sup>2</sup> (two hands).

---

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

Location: Indoor use.

Domain: Industrial use.

Process temperature:

- PROC1, PROC2, PROC3: <=180°C.
- PROC8b, PROC9:<= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

---

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC1: Closed system (minimal contact during routine operations).
- PROC2: Closed continuous process with occasional controlled exposure.
- PROC3: Closed batch process with occasional controlled exposure.
- PROC8b, PROC9: Semi-closed process with occasional controlled exposure.

Local exhaust ventilation:

- PROC1, PROC2, PROC3: Not required.
- PROC9: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

---

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC1, PROC2, PROC3: No (Effectiveness Dermal: 0%).
- PROC8b, PROC9: 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.

---

**2.2 Control of environmental exposure**

**General:**

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

---

**Product characteristics:**

SDS Name: Kalama\* Benzyl Alcohol Technical

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 5 ton/day.  
Maximum annual use at a site: 100 tons/year.  
Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 100 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:**

Industrial use.  
Indoor use.  
Release fraction to air from process (initial release): 0.05; (final release): 0.05. Local release rate: 250 kg/day.  
Release fraction to wastewater from process (initial release): 0.02; (final release): 0.02. Local release rate: 100 kg/day.  
Release fraction to soil from process (final release): 0.001.

**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=87.36%).  
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC8b
Worker, long-term, systemic, Inhalation	13,51 mg/m3	0,614	PROC3
Worker, long-term, systemic, Combined routes	N/A	0,701	PROC3
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC8b
Worker, short-term, systemic, Inhalation	54,06 mg/m3	0,492	PROC3
Worker, short-term, systemic, Combined routes	N/A	0,509	PROC3

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,636 mg/L	0,636	
Freshwater sediment	3,29 mg/kg dw	0,624	
Marine water	0,064 mg/L	0,636	
Marine water sediment	0,329 mg/kg dw	0,624	
Soil	0,215 mg/kg dw	0,472	
STP	6,318 mg/L	0,162	
Human via environment, Inhalation	0,00391 mg/m3	<0,01	
Human via environment, Oral	0,00952 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. PROC8b, PROC9: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC1, PROC2, PROC3: Not required. PROC9: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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): Use at industrial sites - Building & Construction/Distributors - Industrial**

## 1. Exposure scenario (5)

### Short title of the exposure scenario:

Use at industrial sites - Building & Construction/Distributors - Industrial

### List of use descriptors:

Sector of use category (SU): SU19

Product category (PC): PC0

Process category (PROC): PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14.

Environmental release category (ERC): ERC4 (SpERC EFCC 4)

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

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.

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.

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

### 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 EFCC 4 Industrial use of volatile substances in construction chemicals (SpERC EFCC 4.1).

### 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)). 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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

#### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

#### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

#### Human factors not influenced by risk management:

Exposed skin surface:

- PROC5, PROC9, PROC13, PROC14: 480 cm<sup>2</sup> (two hands, face side only).

- PROC8a, PROC8b, PROC10: 960 cm<sup>2</sup> (two hands).

#### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

#### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC8b, PROC9: Semi-closed process with occasional controlled exposure.

- PROC5, PROC8a, PROC10, PROC13, PROC14: No.

Local exhaust ventilation:

- PROC5, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness).

- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC14: No (Effectiveness Dermal: 0%).

SDS Name: Kalama\* Benzyl Alcohol Technical

- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 1,36 ton/day.  
 Maximum annual use at a site: 300 tons/year.  
 Percentage of tonnage used at regional scale: 10 %.

**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): 0.985; (final release): 0.985. Local release rate: 1340 kg/day (SpERC EFCC 4).  
 Release fraction to wastewater from process (initial release): 0.0; (final release): 0.0. Local release rate: 0 kg/day (SpERC EFCC 4).  
 Release fraction to soil from process (final release): 0.0 (SpERC EFCC 4).

**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=87.36%).  
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	3,43 mg/kg bw/day	0,429	PROC14
Worker, long-term, systemic, Inhalation	4,506 mg/m3	0,205	PROC8a, PROC10, PROC13
Worker, long-term, systemic, Combined routes	N/A	0,548	PROC10
Worker, short-term, systemic, Dermal	3,43 mg/kg bw/day	0,086	PROC14
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC8a, PROC10, PROC13
Worker, short-term, systemic, Combined routes	N/A	0,232	PROC10

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00471 mg/L	<0,01	
Freshwater sediment	0,024 mg/kg dw	<0,01	
Marine water	0,000468 mg/L	<0,01	
Marine water sediment	0,00242 mg/kg dw	<0,01	
Soil	0,045 mg/kg dw	0,099	
STP	0 mg/L	<0,01	
Human via environment, Inhalation	0,225 mg/m3	0,042	
Human via environment, Oral	0,237 mg/kg bw/day	0,059	
Human via environment, Combined routes	N/A	0,101	

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, no respirator required. Duration of activity: <=8 hours/day. PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC5, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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): Use at industrial sites - Adhesives and sealants, coatings and paints, fillers, metal and non-metal surface treatment products, ink and toners****1. Exposure scenario (6)****Short title of the exposure scenario:**

Use at industrial sites - Adhesives and sealants, coatings and paints, fillers, metal and non-metal surface treatment products, ink and toners

**List of use descriptors:**

Sector of use category (SU): SU0

Product category (PC): PC1, PC9a, PC9b, PC14, PC15, PC18.

Process category (PROC): PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC23, PROC24, PROC25.

Environmental release category (ERC): ERC4 (SpERC ESVOC 5)

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

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.

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.

PROC12 Use of blowing agents in manufacture of foam.

PROC13 Treatment of articles by dipping and pouring.

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

PROC23 Open processing and transfer operations at substantially elevated temperature. Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations.

PROC24 High (mechanical) energy work-up of substances bound in /on materials and/or articles. Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping.

PROC25 Other hot work operations with metals. Welding, soldering, gouging, brazing, flame cutting.

**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 ESVOC 5 Uses in coatings-industrial (SpERC ESVOC 4.3a).

**Further explanations:**

PC1 Adhesives, sealants.

PC9a Coatings and paints, thinners, paint removers.

PC9b Fillers, putties, plasters, modelling clay.

PC14 Metal surface treatment products.

PC15 Non-metal-surface treatment products.

PC18 Ink and toners.

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)). 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:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

**Product characteristics:**

SDS Name: Kalama\* Benzyl Alcohol Technical

Concentration of substance in mixture/article:

- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=100%.
- PROC7: <=60%.
- PROC23, PROC24, PROC25: >25%

Physical form of the used product:

- PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: liquid
- PROC23, PROC24, PROC25: solid-included into or onto a matrix

Vapour pressure:

- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: 25,94 Pa at 40 °C.
- PROC7: 7 Pa at 20 °C.

Fugacity: PROC23, PROC24, PROC25: Low.

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**Amounts used:**

Application rate (for inhalation exposure): PROC7: moderate application rate (0.3-3 L/minute).

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**Frequency and duration of use/exposure:**

Duration of activity:

- PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=8 hours/day.
- PROC23, PROC24, PROC25: >4 hours/day.

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

Exposed skin surface:

- PROC12: 240 cm<sup>2</sup> (one hand, face side only).
- PROC5, PROC9, PROC13, PROC14: 480 cm<sup>2</sup> (two hands, face side only).
- PROC8a, PROC8b, PROC10: 960 cm<sup>2</sup> (two hands).
- PROC7: 1500 cm<sup>2</sup> (two hands and upper wrists).

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

Location: Indoor use.

Domain: Industrial use.

Process temperature:

- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <= 40 °C.
- PROC7: <= 20 °C.

Assessment tool used:

- PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.
- PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.
- PROC23, PROC24, PROC25: ECETOC TRA v3 for inhalation and dermal exposure.

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**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5): PROC7: Spray application of liquids - surface spraying of liquids. Spray technique: Spraying with no or low compressed air use. Spray direction: Spraying in any direction (including upwards). Process not fully enclosed but demonstrable and effective housekeeping practices in place. Primary controls: fixed capturing hood (90% reduction).

Inhalation exposure model (ART v1.5) - PROC7: covers use in room size of 300 m<sup>3</sup>.

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**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC8b, PROC9, PROC12: Semi-closed process with occasional controlled exposure.
- PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC23, PROC24, PROC25: No.

Local exhaust ventilation:

- PROC12, PROC23, PROC24, PROC25: Not required.
- PROC5, PROC7, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC12, PROC14, PROC23, PROC24, PROC25: No (Effectiveness Dermal: 0%).
- PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (Effectiveness Dermal: 90%).

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**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.

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**2.2 Control of environmental exposure**

**General:**

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

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**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

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**Amounts used:**

Maximum daily use at a site: 1,25 ton/day.

Maximum annual use at a site: 375 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 300 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): 0.098; (final release): 0.098. Local release rate: 122.5 kg/day (SpERC ESVOG 5).

Release fraction to wastewater from process (initial release): 0.02; (final release): 0.02. Local release rate: 25 kg/day (SpERC ESVOG 5).

Release fraction to soil from process (final release): 0.0 (SpERC ESVOG 5).

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure. PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. PROC23, PROC24, PROC25: ECETOC TRA v3 for inhalation and dermal exposure.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	4,286 mg/kg bw/day	0,536	PROC7
Worker, long-term, systemic, Inhalation	9,011 mg/m3	0,41	PROC12
Worker, long-term, systemic, Combined routes	N/A	0,808	PROC7
Worker, short-term, systemic, Dermal	4,286 mg/kg bw/day	0,107	PROC7
Worker, short-term, systemic, Inhalation	36,04 mg/m3	0,328	PROC12
Worker, short-term, systemic, Combined routes	N/A	0,336	PROC12

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,163 mg/L	0,163	
Freshwater sediment	0,841 mg/kg dw	0,16	
Marine water	0,016 mg/L	0,163	
Marine water sediment	0,084 mg/kg dw	0,16	
Soil	0,065 mg/kg dw	0,143	
STP	1,579 mg/L	0,04	
Human via environment, Inhalation	0,028 mg/m3	<0,01	
Human via environment, Oral	0,034 mg/kg bw/day	<0,01	
Human via environment, Combined routes	N/A	0,014	

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, no respirator required. Duration of activity: PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=8 hours/day; PROC23, PROC24, PROC25: >4 hours/day. PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC12, PROC23, PROC24, PROC25: Not required. PROC5, PROC7, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14: <=100%. PROC7: <=60%. PROC23, PROC24, PROC25: >25%.

**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): Use at industrial sites - Lubricants, greases & release products**



## 1. Exposure scenario (7)

### Short title of the exposure scenario:

Use at industrial sites - Lubricants, greases & release products

### List of use descriptors:

Sector of use category (SU): SU0

Product category (PC): PC24

Process category (PROC): PROC18

Environmental release category (ERC): ERC7

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

PROC18 General greasing /lubrication at high kinetic energy conditions. Use of lubricant or greasing agents in high kinetic energy conditions, including manual application.

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

ERC7 Use of functional fluid at industrial site.

### Further explanations:

PC24 Lubricants, greases, release 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

#### General:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

#### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

#### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

#### Human factors not influenced by risk management:

Exposed skin surface: 960 cm<sup>2</sup> (two hands).

#### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

#### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Local exhaust ventilation: Yes (90% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection: 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.

### 2.2 Control of environmental exposure

#### General:

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

#### Product characteristics:

Vapour pressure: 7 Pa at 20 °C

#### Amounts used:

Maximum daily use at a site: 1 ton/day.

Maximum annual use at a site: 20 tons/year.

Percentage of tonnage used at regional scale: 10 %.

#### Frequency and duration of use:

Emission days: 20 days/year.

**Environmental factors not influenced by risk management:**Flow rate of receiving surface water:  $\geq 18,000$  m<sup>3</sup>/day (default).**Other given operational conditions affecting environmental exposure:**

Indoor use.

Industrial use.

Release fraction to air from process (initial release): 0.05; (final release): 0.05. Local release rate: 50 kg/day.

Release fraction to wastewater from process (initial release): 0.05; (final release): 0.05. Local release rate: 50 kg/day.

Release fraction to soil from process (final release): 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=87.36%).

Size of municipal sewage system/treatment plant:  $\geq 2000$  m<sup>3</sup>/day (standard town).**Conditions and measures related to external treatment of waste for disposal:**

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC18
Worker, long-term, systemic, Inhalation	9,011 mg/m <sup>3</sup>	0,41	PROC18
Worker, long-term, systemic, Combined routes	N/A	0,581	PROC18
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC18
Worker, short-term, systemic, Inhalation	36,04 mg/m <sup>3</sup>	0,328	PROC18
Worker, short-term, systemic, Combined routes	N/A	0,362	PROC18

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,321 mg/L	0,321	
Freshwater sediment	1,657 mg/kg dw	0,315	
Marine water	0,032 mg/L	0,321	
Marine water sediment	0,166 mg/kg dw	0,314	
Soil	0,112 mg/kg dw	0,246	
STP	3,159 mg/L	0,081	
Human via environment, Inhalation	0,000864 mg/m <sup>3</sup>	<0,01	
Human via environment, Oral	0,00399 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity:  $\leq 8$  hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article:  $\leq 100\%$ .

**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 at industrial sites - Paper/board dye, finishing/impregnation****1. Exposure scenario (8)****Short title of the exposure scenario:**

Use at industrial sites - Paper/board dye, finishing/impregnation

**List of use descriptors:**

Sector of use category (SU): SU0, SU6b.

Product category (PC): PC26

Process category (PROC): PROC5, PROC6, PROC7, PROC8b, PROC10, PROC13, PROC14.

Environmental release category (ERC): ERC4

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

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.  
PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.  
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.  
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.  
PROC14 Tableting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.

**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:**

PC26 Paper and board treatment 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**

**General:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

**Product characteristics:**

Concentration of substance in mixture/article:

- PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: <=100%.
- PROC7: <=60%.

Physical form of the used product: Liquid.

Vapour pressure:

- PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: 25,94 Pa at 40 °C.
- PROC7: 7 Pa at 20 °C.

**Amounts used:**

Application rate (for inhalation exposure): PROC7: moderate application rate (0.3-3 L/minute).

**Frequency and duration of use/exposure:**

Duration of activity: <=8 hours/day.

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

Exposed skin surface:

- PROC5, PROC13, PROC14: 480 cm<sup>2</sup> (two hands, face side only).
- PROC6, PROC8b, PROC10: 960 cm<sup>2</sup> (two hands).
- PROC7: 1500 cm<sup>2</sup> (two hands and upper wrists).

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

Location: Indoor use.

Domain: Industrial use.

Process temperature:

- PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: <= 40 °C.
- PROC7: <= 20 °C.

Assessment tool used:

- PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.
- PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.

**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5): PROC7: Spray application of liquids - surface spraying of liquids. Spray technique: Spraying with no or low compressed air use. Spray direction: Spraying in any direction (including upwards). Process not fully enclosed but demonstrable and effective housekeeping practices in place. Primary controls: fixed capturing hood (90% reduction).

Inhalation exposure model (ART v1.5) - PROC7: covers use in room size of 300 m<sup>3</sup>.

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC8b: Semi-closed process with occasional controlled exposure.
- PROC5, PROC6, PROC7, PROC10, PROC13, PROC14: No.

Local exhaust ventilation:

- PROC5, PROC6, PROC7, PROC10, PROC13, PROC14: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC14: No (Effectiveness Dermal: 0%).

- PROC5, PROC6, PROC7, PROC8b, PROC10, PROC13: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 1,25 ton/day.

Maximum annual use at a site: 50 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 40 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): 1.0; (final release): 1.0. Local release rate: 1250 kg/day.

Release fraction to wastewater from process (initial release): 1.0; (final release): 0.0. Local release rate: 0 kg/day.

Release fraction to soil from process (final release): 0.05.

**Technical conditions and measures at process level (source) to prevent release:**

Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all used chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure. PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Worker, long-term, systemic, Dermal	4,286 mg/kg bw/day	0,536	PROC7
Worker, long-term, systemic, Inhalation	6 mg/m3	0,273	PROC7
Worker, long-term, systemic, Combined routes	N/A	0,808	PROC7
Worker, short-term, systemic, Dermal	4,286 mg/kg bw/day	0,107	PROC7
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC10, PROC13
Worker, short-term, systemic, Combined routes	N/A	0,232	PROC10

**Environment**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0,00471 mg/L	<0,01	
Freshwater sediment	0,024 mg/kg dw	<0,01	
Marine water	0,000468 mg/L	<0,01	
Marine water sediment	0,002422 mg/kg dw	<0,01	

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Soil	0,015 mg/kg dw	0,034	
STP	0 mg/L	<0,01	
Human via environment, Inhalation	0,038 mg/m3	<0,01	
Human via environment, Oral	0,041 mg/kg bw/day	0,01	
Human via environment, Combined routes	N/A	0,017	

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, no respirator required. Duration of activity: <=8 hours/day. PROC5, PROC6, PROC7, PROC8b, PROC10, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC5, PROC6, PROC7, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: PROC5, PROC6, PROC8b, PROC10, PROC13, PROC14: <=100%. PROC7: <=60%.

##### 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 at industrial sites - Photo-chemicals

##### 1. Exposure scenario (9)

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

Use at industrial sites - Photo-chemicals

###### List of use descriptors:

Sector of use category (SU): SU0

Product category (PC): PC30

Process category (PROC): PROC8a, PROC8b, PROC13.

Environmental release category (ERC): ERC4

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

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:

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

###### Further explanations:

PC30 Photo-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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

###### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

###### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

###### Human factors not influenced by risk management:

Exposed skin surface:

- PROC13: 480 cm<sup>2</sup> (two hands, face side only).
- PROC8a, PROC8b: 960 cm<sup>2</sup> (two hands).

###### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC8b: Semi-closed process with occasional controlled exposure.
- PROC8a, PROC13: No.

Local exhaust ventilation:

- PROC8a, PROC13: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 0.067 ton/day.

Maximum annual use at a site: 20 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 300 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): 1.0; (final release): 1.0. Local release rate: 67 kg/day.

Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 67 kg/day.

Release fraction to soil from process (final release): 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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC8a, PROC8b, PROC13
Worker, long-term, systemic, Inhalation	4,506 mg/m3	0,205	PROC8a, PROC13
Worker, long-term, systemic, Combined routes	N/A	0,376	PROC8a, PROC13
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC8a, PROC8b, PROC13
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC8a, PROC13
Worker, short-term, systemic, Combined routes	N/A	0,198	PROC8a, PROC13

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,428 mg/L	0,428	
Freshwater sediment	2,213 mg/kg dw	0,42	

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Marine water	0,043 mg/L	0,428	
Marine water sediment	0,221 mg/kg dw	0,42	
Soil	0,149 mg/kg dw	0.327	
STP	4,233 mg/L	0,109	
Human via environment, Inhalation	0,015 mg/m3	<0,01	
Human via environment, Oral	0,028 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC8a, PROC13: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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 (10): Use at industrial sites - Use in polymer preparations

##### 1. Exposure scenario (10)

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

Use at industrial sites - Use in polymer preparations

###### List of use descriptors:

Sector of use category (SU): SU0, SU11, SU12

Product category (PC): PC32

Process category (PROC): PROC13

Environmental release category (ERC): ERC4

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

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:

PC32 Polymer preparations and compounds.

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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

###### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

###### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

###### Human factors not influenced by risk management:

Exposed skin surface: 480 cm<sup>2</sup> (two hands, face side only).

###### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

###### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment: No.

SDS Name: Kalama\* Benzyl Alcohol Technical

Local exhaust ventilation: Yes (90% effectiveness).  
Local exhaust ventilation (for dermal): Not required.  
Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.  
Chemical safety goggles.  
Dermal protection: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 1 ton/day.  
Maximum annual use at a site: 20 tons/year.  
Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 20 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): 1.00; (final release): 1.00. Local release rate: 1000 kg/day.  
Release fraction to wastewater from process (initial release): 1,0; (final release): 0,0. Local release rate: 0 kg/day.  
Release fraction to soil from process (final release): 0.05.

**Technical conditions and measures at process level (source) to prevent release:**

Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all used chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.

**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=87.36%).  
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	1,371 mg/kg bw/day	0,171	PROC13
Worker, long-term, systemic, Inhalation	4,506 mg/m3	0,205	PROC13
Worker, long-term, systemic, Combined routes	N/A	0,376	PROC13
Worker, short-term, systemic, Dermal	1,371 mg/kg bw/day	0,034	PROC13
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC13
Worker, short-term, systemic, Combined routes	N/A	0,198	PROC13

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,004712 mg/L	<0,01	
Freshwater sediment	0,024 mg/kg dw	<0,01	
Marine water	0,000468 mg/L	<0,01	
Marine water sediment	0,00242 mg/kg dw	<0,01	
Soil	0,012 mg/kg dw	0.026	



<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
STP	0 mg/L	<0,01	
Human via environment, Inhalation	0,015 mg/m <sup>3</sup>	<0,01	
Human via environment, Oral	0,017 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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 (11): Use at industrial sites - Textile dyes, finishing/impregnation products

##### 1. Exposure scenario (11)

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

Use at industrial sites - Textile dyes, finishing/impregnation products

###### List of use descriptors:

Sector of use category (SU): SU5

Product category (PC): PC34

Process category (PROC): PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14.

Environmental release category (ERC): ERC4 (SpERC TEGEWA 6)

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

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.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

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.

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.

PROC13 Treatment of articles by dipping and pouring.

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

###### 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 TEGEWA 6 Industrial Use of Water Borne Processing Aids (SpERC TEGEWA 4.1.v1).

###### Further explanations:

PC34 Textile dyes, and impregnating 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)). 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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

###### Product characteristics:

Concentration of substance in mixture/article:

- PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <=100%.

- PROC7: <=60%.

Physical form of the used product: Liquid.

SDS Name: Kalama\* Benzyl Alcohol Technical

Vapour pressure:

- PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: 25,94 Pa at 40 °C.
- PROC7: 7 Pa at 20 °C.

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**Amounts used:**

Application rate (for inhalation exposure): PROC7: moderate application rate (0.3-3 L/minute).

---

**Frequency and duration of use/exposure:**

Duration of activity: <=8 hours/day.

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

Exposed skin surface:

- PROC5, PROC9, PROC13, PROC14: 480 cm<sup>2</sup> (two hands, face side only).
- PROC6, PROC8a, PROC8b, PROC10: 960 cm<sup>2</sup> (two hands).
- PROC7: 1500 cm<sup>2</sup> (two hands and upper wrists).

---

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

Location: Indoor use.

Domain: Industrial use.

Process temperature:

- PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <= 40 °C.
- PROC7: <= 20 °C.

Assessment tool used:

- PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.
- PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.

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**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5): PROC7: Spray application of liquids - surface spraying of liquids. Spray technique: Spraying with no or low compressed air use. Spray direction: Spraying in any direction (including upwards). Process not fully enclosed but demonstrable and effective housekeeping practices in place. Primary controls: fixed capturing hood (90% reduction).  
Inhalation exposure model (ART v1.5) - PROC7: covers use in room size of 300 m<sup>3</sup>.

---

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment:

- PROC8b, PROC9: Semi-closed process with occasional controlled exposure.
- PROC5, PROC6, PROC7, PROC8a, PROC10, PROC13, PROC14: No.

Local exhaust ventilation:

- PROC5, PROC6, PROC7, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness).
- PROC8b: Yes (95% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

---

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection:

- PROC14: No (Effectiveness Dermal: 0%).
- PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13: 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.

---

**2.2 Control of environmental exposure**

**General:**

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

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**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

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**Amounts used:**

Maximum daily use at a site: 0.045 ton/day.

Maximum annual use at a site: 10 tons/year.

Percentage of tonnage used at regional scale: 10 %.

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**Frequency and duration of use:**

Emission days: 220 days/year.

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

Flow rate of receiving surface water: >=18000 m<sup>3</sup>/day (default).

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**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 TEGEWA 6).

Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 45 kg/day (SpERC TEGEWA 6).

Release fraction to soil from process (final release): 0.0 (SpERC TEGEWA 6).

---

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure. PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Worker, long-term, systemic, Dermal	4,286 mg/kg bw/day	0,536	PROC7
Worker, long-term, systemic, Inhalation	6 mg/m3	0,273	PROC7
Worker, long-term, systemic, Combined routes	N/A	0,808	PROC7
Worker, short-term, systemic, Dermal	4,286 mg/kg bw/day	0,107	PROC7
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC8a, PROC10, PROC13
Worker, short-term, systemic, Combined routes	N/A	0,232	PROC10

**Environment**

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Freshwater	0,289 mg/L	0,289	
Freshwater sediment	1,494 mg/kg dw	0,284	
Marine water	0,029 mg/L	0,289	
Marine water sediment	0,149 mg/kg dw	0,283	
Soil	0,102 mg/kg dw	0,223	
STP	2,843 mg/L	0,073	
Human via environment, Inhalation	0,000104 mg/m3	<0,01	
Human via environment, Oral	0,00616 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13: Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC5, PROC6, PROC7, PROC8a, PROC9, PROC10, PROC13, PROC14: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14: <=100%. PROC7: <=60%.

**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 (12): Use at industrial sites - Washing & cleaning products - Cosmetic & personal care products**

**1. Exposure scenario (12)**

**Short title of the exposure scenario:**

Use at industrial sites - Washing & cleaning products - Cosmetic & personal care products

**List of use descriptors:**

Sector of use category (SU): SU0

Product category (PC): PC35, PC39

Process category (PROC): PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13.

Environmental release category (ERC): ERC4 (SpERC ESVOG 8)

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

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.

SDS Name: Kalama\* Benzyl Alcohol Technical

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.  
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 ESVOC 8 Use in cleaning agents - Industrial (SpERC ESVOC4.4a).

**Further explanations:**

PC35 Washing and cleaning products.  
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)). 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:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

**Product characteristics:**

Concentration of substance in mixture/article:  
- PROC8a, PROC8b, PROC9, PROC10, PROC13: <=100%.  
- PROC7: <=60%.  
Physical form of the used product: Liquid.  
Vapour pressure:  
- PROC8a, PROC8b, PROC9, PROC10, PROC13: 25,94 Pa at 40 °C.  
- PROC7: 7 Pa at 20 °C.

**Amounts used:**

Application rate (for inhalation exposure): PROC7: moderate application rate (0.3-3 L/minute).

**Frequency and duration of use/exposure:**

Duration of activity: <=8 hours/day.

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

Exposed skin surface:  
- PROC9, PROC13: 480 cm<sup>2</sup> (two hands, face side only).  
- PROC8a, PROC8b, PROC10: 960 cm<sup>2</sup> (two hands).  
- PROC7: 1500 cm<sup>2</sup> (two hands and upper wrists).

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

Location: Indoor use.  
Domain: Industrial use.  
Process temperature:  
- PROC8a, PROC8b, PROC9, PROC10, PROC13: <= 40 °C.  
- PROC7: <= 20 °C.  
Assessment tool used:  
- PROC8a, PROC8b, PROC9, PROC10, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.  
- PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.

**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5): PROC7: Spray application of liquids - surface spraying of liquids. Spray technique: Spraying with no or low compressed air use. Spray direction: Spraying in any direction (including upwards). Process not fully enclosed but demonstrable and effective housekeeping practices in place. Primary controls: fixed capturing hood (90% reduction).  
Inhalation exposure model (ART v1.5) - PROC7: covers use in room size of 300 m<sup>3</sup>.

**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.  
Containment:  
- PROC8b, PROC9: Semi-closed process with occasional controlled exposure.  
- PROC7, PROC8a, PROC10, PROC13: No.  
Local exhaust ventilation:  
- PROC7, PROC8a, PROC9, PROC10, PROC13: Yes (90% effectiveness).  
- PROC8b: Yes (95% effectiveness).  
Local exhaust ventilation (for dermal): Not required.  
Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.  
Chemical safety goggles.

SDS Name: Kalama\* Benzyl Alcohol Technical

Dermal protection: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 5 ton/day.

Maximum annual use at a site: 100 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 220 days/year.

**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.

Industrial use.

Release fraction to air from process (initial release): 0.30; (final release): 0.30. Local release rate: 1500 kg/day (SpERC ESVOG 8).

Release fraction to wastewater from process (initial release): 0.0001; (final release): 0.0001. Local release rate: 0.5 kg/day (SpERC ESVOG 8).

Release fraction to soil from process (final release): 0.0 (SpERC ESVOG 8).

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: PROC8a, PROC8b, PROC9, PROC10, PROC13: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure. PROC7: ECETOC TRA Worker v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	4,286 mg/kg bw/day	0,536	PROC7
Worker, long-term, systemic, Inhalation	6 mg/m3	0,273	PROC7
Worker, long-term, systemic, Combined routes	N/A	0,808	PROC7
Worker, short-term, systemic, Dermal	4,286 mg/kg bw/day	0,107	PROC7
Worker, short-term, systemic, Inhalation	18,02 mg/m3	0,164	PROC8a, PROC10, PROC13
Worker, short-term, systemic, Combined routes	N/A	0,232	PROC10

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,00787 mg/L	<0,01	
Freshwater sediment	0,041 mg/kg dw	<0,01	
Marine water	0.000784 mg/L	<0,01	
Marine water sediment	0,00405 mg/kg dw	<0,01	
Soil	0,014 mg/kg dw	0,031	
STP	0,032 mg/L	<0,01	
Human via environment, Inhalation	0,023 mg/m3	<0,01	
Human via environment, Oral	0,025 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. Wear chemical resistant gloves (tested to EN 374) in combination with basic employee training. Local exhaust ventilation: PROC7, PROC8a, PROC9, PROC10, PROC13: Yes (90% effectiveness). PROC8b: Yes (95% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: PROC8a, PROC8b, PROC9, PROC10, PROC13: <=100%. PROC7: <=60%.

## 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): Use at industrial sites - Industrial use as laboratory reagent

### 1. Exposure scenario (13)

#### Short title of the exposure scenario:

Use at industrial sites - Industrial use as laboratory reagent

#### List of use descriptors:

Product category (PC): PC21

Process category (PROC): PROC15

Environmental release category (ERC): ERC4

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

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:

ERC4 Use of non-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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

##### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

##### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

##### Human factors not influenced by risk management:

Exposed skin surface: 240 cm<sup>2</sup> (one hand, face side only).

##### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Industrial use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

##### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment: No.

Local exhaust ventilation: Yes (90% effectiveness).

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Chemical safety goggles.

Dermal protection: No (Effectiveness Dermal: 0%).

##### 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Maximum daily use at a site: 0.25 ton/day.

Maximum annual use at a site: 5 tons/year.

Percentage of tonnage used at regional scale: 10 %.

**Frequency and duration of use:**

Emission days: 20 days/year.

**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.

Industrial use.

Release fraction to air from process (initial release): 1.0; (final release): 1.0. Local release rate: 250 kg/day.

Release fraction to wastewater from process (initial release): 1.0; (final release): 0.0. Local release rate: 0 kg/day.

Release fraction to soil from process (final release): 0.05.

**Technical conditions and measures at process level (source) to prevent release:**

Waterless process: yes (Effectiveness Water: 100%). No release to waste water, all used chemicals are collected and disposed of as hazardous wastes to hazardous waste incineration.

**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=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	0,34 mg/kg bw/day	0,043	PROC15
Worker, long-term, systemic, Inhalation	2,253 mg/m3	0,102	PROC15
Worker, long-term, systemic, Combined routes	N/A	0,145	PROC15
Worker, short-term, systemic, Dermal	0,34 mg/kg bw/day	<0,01	PROC15
Worker, short-term, systemic, Inhalation	9,011 mg/m3	0,082	PROC15
Worker, short-term, systemic, Combined routes	N/A	0,09	PROC15

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,00471 mg/L	<0,01	
Freshwater sediment	0,024 mg/kg dw	<0,01	
Marine water	0,000468 mg/L	<0,01	
Marine water sediment	0,00242 mg/kg dw	<0,01	
Soil	0,00987 mg/kg dw	0,022	
STP	0 mg/L	<0,01	
Human via environment, Inhalation	0,00391 mg/m3	<0,01	
Human via environment, Oral	0,00485 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. Local exhaust ventilation: Yes (90% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye

irritation: Chemical goggles. Concentration of substance in mixture/article: <=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 (14): Use by professional workers - Professional use - Stripping applications & Epoxy resins (indoor and outdoor)

### 1. Exposure scenario (14)

#### Short title of the exposure scenario:

Use by professional workers - Professional use - Stripping applications & Epoxy resins (indoor and outdoor)

#### List of use descriptors:

Sector of use category (SU): SU0, SU19

Product category (PC): PC1, PC3, PC8, PC9a, PC9b, PC14, PC15, PC18, PC20, PC21, PC23, PC24, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC34, PC35, PC39.

Process category (PROC): PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC21, PROC23, PROC24, PROC25.

Environmental release category (ERC): ERC8a, ERC8d

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

CS1: PROC5 (indoor/outdoor use).

CS2: PROC6 (indoor/outdoor use).

CS3: PROC8a (indoor/outdoor use).

CS4: PROC8b (indoor/outdoor use).

CS5: PROC9 (indoor/outdoor use).

CS6: PROC10 (indoor/outdoor use).

CS7: PROC11 Non-industrial spraying with lance - concentration 70% (only horizontal and downward spraying, indoor use) - Stripping application.

CS8: PROC11 Non-industrial spraying with lance - concentration 70% (only horizontal and downward spraying, outdoor use) - Stripping application.

CS9: PROC11 Non-industrial spraying with lance - concentration 70% (spraying in any direction, indoor use) - Stripping application.

CS10: PROC11 Non-industrial spraying with lance - concentration 70% (spraying in any direction, outdoor use) - Stripping application.

CS11: PROC11 Non-industrial spraying with lance - concentration 50% (only horizontal and downward spraying, indoor use) - Stripping application.

CS12: PROC11 Non-industrial spraying with lance - concentration 50% (only horizontal and downward spraying, outdoor use) - Stripping application.

CS13: PROC11 Non-industrial spraying with lance - concentration 50% (spraying in any direction, indoor use) - Stripping application.

CS14: PROC11 Non-industrial spraying with lance - concentration 50% (spraying in any direction, outdoor use) - Stripping application.

CS15: PROC11 Non-industrial spraying without lance - concentration 20% (spraying in any direction, indoor use) - Stripping application.

CS16: PROC11 Non-industrial spraying without lance - concentration 20% (spraying in any direction, outdoor use) - Stripping application.

CS17: PROC11 Non-industrial spraying with lance - concentration 10% (only horizontal and downward spraying, high application rate, indoor use) - Epoxy resins.

CS18: PROC11 Non-industrial spraying with lance - concentration 10% (only horizontal and downward spraying, high application rate, outdoor use) - Epoxy resins.

CS19: PROC11 Non-industrial spraying with lance - concentration 10% (spraying in any direction, high application rate, indoor use) - Epoxy resins.

CS20: PROC11 Non-industrial spraying with lance - concentration 10% (spraying in any direction, high application rate, outdoor use) - Epoxy resins.

CS21: PROC11 Non-industrial spraying with lance - concentration 10% (only horizontal and downward spraying, indoor use) - Epoxy resins.

CS22: PROC11 Non-industrial spraying with lance - concentration 10% (only horizontal and downward spraying, outdoor use) - Epoxy resins.

CS23: PROC11 Non-industrial spraying with lance - concentration 10% (spraying in any direction, indoor use) - Epoxy resins.

CS24: PROC11 Non-industrial spraying with lance - concentration 10% (spraying in any direction, outdoor use) - Epoxy resins.

CS25: PROC11 Non-industrial spraying without lance - concentration 10% (only horizontal and downward spraying, indoor use) - Epoxy resins.

CS26: PROC11 Non-industrial spraying without lance - concentration 10% (only horizontal and downward spraying, outdoor use) - Epoxy resins.

CS27: PROC11 Non-industrial spraying without lance - concentration 10% (spraying in any direction, indoor use) - Epoxy resins.

CS28: PROC11 Non-industrial spraying without lance - concentration 10% (spraying in any direction, outdoor use) - Epoxy resins.

CS29: PROC13 (indoor/outdoor use).

CS30: PROC14 (indoor/outdoor use).

CS31: PROC21 (indoor/outdoor use).

CS32: PROC23 (indoor/outdoor use).

CS33: PROC24 (indoor/outdoor use).

CS34: PROC25 (indoor/outdoor use).

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.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

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.

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.



SDS Name: Kalama\* Benzyl Alcohol Technical

PROC13 Treatment of articles by dipping and pouring.

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

PROC21 Low energy manipulation and handling of substances bound in/on materials or articles. Cover activities such as manual cutting, cold rolling or assembly/disassembly of material/article.

PROC23 Open processing and transfer operations at substantially elevated temperature. Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations.

PROC24 High (mechanical) energy work-up of substances bound in /on materials and/or articles. Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping.

PROC25 Other hot work operations with metals. Welding, soldering, gouging, brazing, flame cutting.

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**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).

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**Further explanations:**

PC1 Adhesives, sealants.

PC3 Air care products.

PC8 Biocidal products.

PC9a Coatings and paints, thinners, paint removers.

PC9b Fillers, putties, plasters, modelling clay.

PC14 Metal surface treatment products.

PC15 Non-metal-surface treatment products.

PC18 Ink and toners.

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents.

PC21 Laboratory chemicals.

PC23 Leather treatment products.

PC24 Lubricants, greases, release products.

PC26 Paper and board treatment products.

PC27 Plant protection products.

PC28 Perfumes, fragrances.

PC29 Pharmaceuticals.

PC30 Photo-chemicals.

PC31 Polishes and wax blends.

PC32 Polymer preparations and compounds.

PC34 Textile dyes, and impregnating products.

PC35 Washing and cleaning products.

PC39 Cosmetics, personal care products.

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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)).

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**2. Conditions of use affecting exposure**

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**2.1 Control of workers exposure**

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**General:**

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
  - Work procedures minimising splashes and spills
  - Avoidance of contact with contaminated tools and objects
  - Regular cleaning of equipment and work area
  - Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
  - Training for staff on good practice
  - Good standard of personal hygiene
- 

**Product characteristics:**

Concentration of substance in mixture/article: Unless otherwise stated, <=100%.

- CS7-CS10: <=70%.

- CS11-CS14: <=50%.

- CS15, CS16: <=20%.

- CS17-CS28: <=10%.

- CS30-CS34: >25%.

Physical form of the used product:

- CS1-CS29: liquid.

- CS30-CS31: solid.

- CS32-CS34: solid-included into or onto a matrix.

Vapour pressure:

- CS1-CS31, CS33: <7 Pa at 20 °C.

- CS32, CS34: 1000 Pa.

Fugacity: Medium (applicable only to CS32, CS33, CS34).

Moisture content: CS30, CS31: >10%.

Dustiness of solids: (applicable only to CS30 & CS31).

- CS30: Low

- CS31: Medium

Spray: CS7-CS28: Yes.

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**Amounts used:**

Application rate: Unless otherwise stated, not specified.

SDS Name: Kalama\* Benzyl Alcohol Technical

- CS3-CS5: 100-1000 L/minute.
- CS7-C16: <=0.125 L/minute.
- CS17-CS20: <=5 L/minute.
- CS21-CS24: <=2,5 L/minute.
- CS25-CS28: <=0,5 L/minute.
- CS30: >1000 kg/minute.

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**Frequency and duration of use/exposure:**

Duration of activity:

- CS1-CS5, CS29-31: >4-8 hours/day.
- CS6: <=4 hours/day.
- CS32-CS34: >4 hours/day.
- CS7: <=90 minutes/day.
- CS8, CS10, CS12, CS14, CS18, CS22, CS24: <=180 minutes/day.
- CS9: <=55 minutes/day.
- CS11, CS16: <=130 minutes/day.
- CS13: <=95 minutes/day.
- CS15, CS19: <=50 minutes/day.
- CS17, CS25: <=70 minutes/day.
- CS20: <=145 minutes/day.
- CS21: <=110 minutes/day.
- CS23: <=75 minutes/day.
- CS26: <=160 minutes/day.
- CS27: <=45 minutes/day.
- CS28: <=120 minutes/day.

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

Exposed skin surface:

- CS5, CS30: 240 cm<sup>2</sup> (one hand, face side only).
- CS1, CS3, CS4, CS29: 480 cm<sup>2</sup> (two hands, face side only).
- CS2, CS6, CS31: 960 cm<sup>2</sup> (two hands).
- CS7-CS28: 1500 cm<sup>2</sup> (two hands and upper wrists).

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

Location: Unless otherwise stated, Indoor/outdoor use.

- CS7, CS9, CS11, CS13, CS15, CS17, CS19, CS21, CS23, CS25, CS27: Indoor use.
- CS8, CS10, CS12, CS14, CS16, CS18, CS20, CS22, CS24, CS26, CS28: Outdoor use.

Domain: Professional use.

Process temperature: Unless otherwise stated, <= 20 °C

- CS7-CS16: 7-21°C.
- CS17-CS28: 9-23°C.

Assessment tool used:

- CS1-CS5, CS29-CS31: ECETOC TRA v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure.
- CS6: CHESAR v3.4 Worker TRA v3 for dermal exposures. Monitoring data from Berufsgenossenschaft der Bauwirtschaft (BG Bau) March 2019 for inhalation exposures.
- CS7-CS28: RiskofDerm Tier 2 for dermal exposures. Monitoring data from Berufsgenossenschaft der Bauwirtschaft (BG Bau) March 2019 for inhalation exposures.
- CS32-CS34: ECETOC TRA v3 for inhalation and dermal exposure.

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**Technical conditions and measures at process level (source) to prevent release:**

Activity class - subclass (ART v1.5):

- CS1: Activities with open liquid surfaces and open reservoirs - activities with agitated surfaces. Open surface 0,3-1 m<sup>2</sup>. Containment: No. Process not fully enclosed.
- CS2: Activities with open liquid surfaces and open reservoirs - activities with relatively undisturbed surfaces. Open surface >3 m<sup>2</sup>. Containment: No. Process not fully enclosed.
- CS3, CS4: Transfer of liquid products - falling liquids. Containment: No. Process not fully enclosed.
- CS5: Transfer of liquid products - bottom loading. Containment: No. Process not fully enclosed.
- CS29: Handling of contaminated objects: Level of contamination: >90% of surface; Activities with treated/contaminated objects (surface >3 m<sup>2</sup>). Containment: No. Process not fully enclosed.
- CS30: Compressing of powders, granules or pelletized material. Containment: open process. Process not fully enclosed.
- CS31: Fracturing and abrasion of solid objects - mechanical pulverization of stone or large objects. Containment: open process. Process not fully enclosed.

Inhalation exposure model (ART v1.5) (indoor use) - covers use in room size of:

- CS1- CS5, CS29-CS31: 100 m<sup>3</sup>.
- CS7-CS16: 27-720 m<sup>3</sup>.
- CS17-CS28: 500-22500 m<sup>3</sup>.

Spray direction:

- CS7, CS8, CS11, CS12, CS17, CS18, CS21, CS22, CS25, CS26: Only horizontal or downward spraying.
- CS9, CS10, CS13-CS16, CS19, CS20, CS23, CS24, CS27, CS28: Spraying in any direction (including upwards).

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**Technical conditions and measures to control dispersion from source towards the worker:**

General ventilation: Basic general ventilation (1-3 air changes per hour): 0% (indoor use). Outdoors (outdoor use).

Local exhaust ventilation: Not required.

Local exhaust ventilation (for dermal): Not required.

Occupational Health and Safety Management System: Basic.

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

Respiratory protection:

- CS1-CS5, CS6 (epoxy resins), CS29-CS34: Not required.
- CS6 (stripping application): Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%).

SDS Name: Kalama\* Benzyl Alcohol Technical

- CS7-CS28: Yes (minimum efficiency inhalation: 90%).
- Chemical safety goggles.
- Dermal protection: Yes.
- CS1-CS5, CS29-CS34: Gloves APF 5 (minimum efficiency dermal: 80%).
- CS6-CS28: 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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Daily wide dispersive use: 0.00055 tons/day.  
 Percentage of tonnage used at regional scale: 10 %.

**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.  
 Professional use.  
 Release fraction to air from process (initial release): 1,0; (final release): 1,0.  
 Release fraction to wastewater from process (initial release): 1,0; (final release): 1,0. Local release rate: 0,55 kg/day.  
 Release fraction to soil from process:  
 - 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 ( Efficiency=87.36%).  
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CS1-CS5, CS29-CS31: ECETOC TRA v3 for dermal exposures. Advanced REACH Tool (ART v1.5) for inhalation exposure. CS6: CHESAR v3.4 Worker TRA v3 for dermal exposures. Monitoring data from Berufsgenossenschaft der Bauwirtschaft (BG Bau) March 2019 for inhalation exposures. CS7-CS28: RiskofDerm Tier 2 for dermal exposures. Monitoring data from Berufsgenossenschaft der Bauwirtschaft (BG Bau) March 2019 for inhalation exposures. CS32-CS34: ECETOC TRA v3 for inhalation and dermal exposure.

Assessment method-Environment: EUSES 2.1.2.

**Health**

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Worker, long-term, systemic, Dermal	6,78 mg/kg bw/day	0,848	PROC11 (CS28)
Worker, long-term, systemic, Inhalation	20 mg/m3	0,909	PROC23 (CS32)
Worker, long-term, systemic, Combined routes	N/A	0,993	PROC11 (CS28)
Worker, short-term, systemic, Dermal	6,78 mg/kg bw/day	0,17	PROC11 (CS28)
Worker, short-term, systemic, Inhalation	80 mg/m3	0,727	PROC23 (CS32)
Worker, short-term, systemic, Combined routes	N/A	0,734	PROC23 (CS32)

**Environment**

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Freshwater	0,00818 mg/L	<0,01	ERC8a, ERC8d
Freshwater sediment	0,042 mg/kg dw	<0,01	ERC8a, ERC8d
Marine water	0,000815 mg/L	<0,01	ERC8a, ERC8d
Marine water sediment	0,00422 mg/kg dw	<0,01	ERC8a, ERC8d
Soil	0,01 mg/kg dw	0,023	ERC8a, ERC8d

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
STP	0,035 mg/L	<0,01	ERC8a, ERC8d
Human via environment, Inhalation	0,000103 mg/m3	<0,01	ERC8a, ERC8d
Human via environment, Oral	0,000895 mg/kg bw/day	<0,01	ERC8a, ERC8d
Human via environment, Combined routes	N/A	<0,01	ERC8a, ERC8d

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/outdoor use, without LEV, with gloves. Duration of activity: CS1-CS5, CS29-31: >4-8 hours/day. CS6: <=4 hours/day. CS32-CS34: >4 hours/day. CS7: <=90 minutes/day. CS8, CS10, CS12, CS14, CS18, CS22, CS24:<180 minutes/day. CS9: <=55 minutes/day. CS11, CS16: <=130 minutes/day. CS13: <=95 minutes/day. CS15, CS19: <=50 minutes/day. CS17, CS25: <=70 minutes/day. CS20: <=145 minutes/day. CS21: <=110 minutes/day. CS23: <=75 minutes/day. CS26: <=160 minutes/day. CS27: <=45 minutes/day. CS28: <=120 minutes/day. Respiratory protection: CS1-CS5, CS6 (epoxy resins), CS29-CS34: Not required. CS6 (stripping application): Yes (Respirator with APF of 10) (Effectiveness Inhalation: 90%). CS7-CS28: Yes (minimum efficiency inhalation: 90%). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: Unless otherwise stated, <=100%. CS7-CS10: <=70%. CS11-CS14: <=50%. CS15, CS16: <=20%. CS17-CS28: <=10%. CS30-CS34: >25%.

##### 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): Use by professional workers - Professional use as laboratory reagent

##### 1. Exposure scenario (15)

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

Use by professional workers - Professional use as laboratory reagent

###### List of use descriptors:

Product category (PC): PC21

Process category (PROC): PROC15

Environmental release category (ERC): ERC8a

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

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:

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

###### 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:

Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. General RMMs/OCs that have to be applied when using a low hazard substance are as follows:

- Minimisation of manual phases/work tasks
- Work procedures minimising splashes and spills
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Management/supervision in place to check that the RMMs in place are being used correctly and OCs are followed
- Training for staff on good practice
- Good standard of personal hygiene

###### Product characteristics:

Concentration of substance in mixture/article: <=100%.

Physical form of the used product: Liquid.

Vapour pressure: 25,94 Pa at 40 °C

###### Frequency and duration of use/exposure:

Duration of activity: <=8 hours/day.

###### Human factors not influenced by risk management:

Exposed skin surface: 240 cm<sup>2</sup> (one hand, face side only).

###### Other given operational conditions affecting workers exposure:

Location: Indoor use.

Domain: Professional use.

Process temperature: <= 40 °C.

Assessment tool used: CHESAR v3.4 Worker TRA v3 for inhalation and dermal exposure.

###### Technical conditions and measures to control dispersion from source towards the worker:

General ventilation: Basic general ventilation (1-3 air changes per hour): 0%.

Containment: No.

SDS Name: Kalama\* Benzyl Alcohol Technical

Local exhaust ventilation: Yes (80% effectiveness).  
Local exhaust ventilation (for dermal): Not required.  
Occupational Health and Safety Management System: Basic.

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

Respiratory protection: Not required.  
Chemical safety goggles.  
Dermal protection: No (Effectiveness Dermal: 0%).

**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.

**2.2 Control of environmental exposure**

**General:**

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

**Product characteristics:**

Vapour pressure: 7 Pa at 20 °C

**Amounts used:**

Daily wide dispersive use: <=0.01 tons/day.  
Percentage of tonnage used at regional scale: 10 %.

**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.  
Professional use.  
Release fraction to air from process (initial release): 1.0; (final release): 1.0.  
Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 10 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 ( Efficiency=87.36%).  
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

**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**

Assessment method-Health: CHESAR v3.4 Worker TRA v3.

Assessment method-Environment: EUSES 2.1.2.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	0,34 mg/kg bw/day	0,043	PROC15
Worker, long-term, systemic, Inhalation	4,506 mg/m3	0,205	PROC15
Worker, long-term, systemic, Combined routes	N/A	0,247	PROC15
Worker, short-term, systemic, Dermal	0,34 mg/kg bw/day	<0,01	PROC15
Worker, short-term, systemic, Inhalation	18,02mg/m3	0,164	PROC15
Worker, short-term, systemic, Combined routes	N/A	0,172	PROC15

**Environment**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Freshwater	0,068 mg/L	0,068	
Freshwater sediment	0,351 mg/kg dw	0,067	
Marine water	0,00679 mg/L	0,068	
Marine water sediment	0,035 mg/kg dw	0,067	
Soil	0,03 mg/kg dw	0,065	
STP	0,632 mg/L	0,016	
Human via environment, Inhalation	0,000103 mg/m3	<0,01	

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Human via environment, Oral	0,00245 mg/kg bw/day	<0,01	
Human 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, no respirator required. Duration of activity: <=8 hours/day. Local exhaust ventilation: Yes (80% effectiveness). Personal protective equipment (PPE) that has to be applied when using a low hazard substance which causes serious eye irritation: Chemical goggles. Concentration of substance in mixture/article: <=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 16): Consumer use - Consumer uses

##### 1. Exposure scenario (16)

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

Consumer use - Consumer uses

###### List of use descriptors:

Product category (PC): PC1, PC3, PC9a, PC9b, PC18, PC23, PC28, PC31, PC34, PC35, PC39.

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:

PC1 Adhesives, sealants:

- CS1: Joint sealant
- CS2: Tube glue
- CS3: Universal/wood glue
- CS4: Construction glue
- CS5: Spray glue
- CS6: Wood parquet glue, Mixing/Loading
- CS7: Wood parquet glue, Application
- CS8: Filler/Putty from tube
- CS9: Two-component filler, Mixing/Loading
- CS10: Two-component filler, Application
- CS11: Putty spray

PC3 Air care products:

- CS12: Spray application (child, post application)
- CS13: Spray application
- CS14: Electrical evaporators
- CS15: Electrical evaporators (child, post application)

PC9a Coatings and paints, thinners, paint removers:

- CS16: General coating
- CS17: Paint remover
- CS18: Brush & roller painting with solvent rich paint
- CS19: Brush & roller painting with water borne paint
- CS20: Pneumatic spraying

PC9b Fillers, putties, plasters, modelling clay:

- CS21: Wall plaster

PC18 Ink and toners:

- CS22: Ink and toners

PC23 Leather treatment products:

- CS23: Shoe polish spray
- CS24: Shoe cream

PC28 Perfumes, fragrances:

- CS25: Perfumed articles
- CS26: Perfumed candles

PC31 Polishes and wax blends:

- CS27: Shoe polish spray
- CS28: Shoe cream
- CS29: Floor polish
- CS30: Floor sealer

PC34 Textile dyes, and impregnating products:

- CS31: Loading of washing machines with liquid detergent
- CS32: Manual washing with liquid detergent
- CS33: Residues on clothing after washing with liquid detergent
- CS34: Use of pastes

PC35 Washing and cleaning products:

SDS Name: Kalama\* Benzyl Alcohol Technical

- CS35: Loading of washing machines with liquid detergent
- CS36: Manual washing with liquid detergent
- CS37: Residues on clothing after washing with liquid detergent
- CS38: Use of pastes
- CS39: Use of All Purpose Cleaner: Liquid Cleaner, Mixing/Loading
- CS40: Use of All Purpose Cleaner: Liquid Cleaner, Application
- CS41: Use of All Purpose Cleaner: Spray Cleaner, Spraying
- CS42: Use of All Purpose Cleaner: Spray Cleaner, Cleaning
- CS43: Use of Sanitary Products: Bathroom cleaning liquid, Mixing/Loading
- CS44: Use of Sanitary Products: Bathroom cleaning liquid, Application
- CS45: Use of Sanitary Products: Bathroom cleaning spray, Spraying
- CS46: Use of Sanitary Products: Bathroom cleaning spray, Cleaning
- CS47: Use of Sanitary Products: Liquid toilet rim cleaner

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

#### General:

PC28 & PC39: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

#### Product characteristics:

Concentration of substance in mixture/article: Unless otherwise stated, <=25%.

- CS10: <=15%.
- CS12-CS16, CS21, CS31, CS35, CS39, CS41-CS43, CS45-CS47: <=10%.
- CS7, CS18- CS20, CS22-CS24, CS27-CS31: <=5%.
- CS26: <=1,80%.
- CS34, CS38: <=1%.
- CS44: <=0,22%.
- CS40: <=0,125%.
- CS25, CS32, CS36: <=0.1%.
- CS33, CS37: <=0,01%.

Vapour pressure: Unless otherwise stated <7 Pa at 20 °C. CS26: <331 Pa at 70 °C.

Exposure via inhalation route: Unless otherwise stated, Yes. CS12, CS15, CS21, CS33, CS37: Not relevant.

Exposure via dermal route: Unless otherwise stated, Yes. CS14, CS26, CS47: Dermal exposure assumed to be negligible.

Oral contact foreseen: Unless otherwise stated, No. CS5, CS11, CS12, CS15, CS20, CS23, CS27, CS41, CS45: Yes.

Spray: Unless otherwise stated, No. CS5, CS11-CS13, CS20, CS23, CS27, CS41, CS45: Yes.

Average molecular weight of the matrix (product minus the compound of interest):

- CS1-CS4, CS6-CS10: 3000 g/mol.
- CS16-CS18, CS22: 300 g/mol.
- CS19: 45 g/mol.
- CS29, CS30, CS39, CS42: 22 g/mol.
- CS31, CS35: 90 g/mol.
- CS40, CS44: 18 g/mol.
- CS43: 26 g/mol.
- CS46: 36 g/mol.

Mass transfer coefficient: CS1-CS4, CS6-CS10, CS16-CS19, CS22, CS29-CS31, CS35, CS39, CS40, CS42-CS44, CS46: 0,275 m/minute.

Airborne fraction of the non-volatile material:

- CS5, CS11, CS14, CS23, CS27: 100%.
- CS13: 30%.
- CS20, CS41, CS45: 20%.

Weight fraction of the non-volatile material:

- CS13, CS14: 90%.
- CS20: 50%.
- CS11: 30%.
- CS5: 25%.
- CS41, CS45: 10%.
- CS23, CS27: 5%.

#### Amounts used:

Applied amounts for each use event:

- CS1: covers amounts up to 75 g (inhalation); Dermal contact rate 50 mg/minute for 30 minutes.
- CS2: covers amounts up to 9 g (inhalation); 0,08 g (dermal).
- CS3: covers amounts up to 10 g (inhalation); 0,08 g (dermal).
- CS4: covers amounts up to 250 g (inhalation); 0,25 g (dermal).
- CS5: Inhalation mass generation rate 1.5 g/second for spray duration 2,83 minutes; Dermal contact rate 100 mg/minute for 2,83 minutes.
- CS6: covers amounts up to 7000 g (inhalation); 0,2 g (dermal).
- CS7: covers amounts up to 22000 g (inhalation); Dermal contact rate 30 mg/minute for 300 minutes.
- CS8: covers amounts up to 40 g (inhalation); 0,05 g (dermal).
- CS9: covers amounts up to 200 g (inhalation); 0,02 g (dermal).
- CS10: covers amounts up to 200 g (inhalation); 0,2 g (dermal).
- CS11: Inhalation mass generation rate 1,5 g/second for spray duration 2,25 minutes; Dermal contact rate 100 mg/minute for 2,25 minutes.
- CS12: Dermal contact rate 269 mg/minute for 0,33 minutes.
- CS13: Inhalation mass generation rate 1,1 g/second for spray duration 0,33 minutes; Dermal contact rate 269 mg/minute for 0,33 minutes.
- CS14: Inhalation mass generation rate 0,00022 g/second for spray duration 480 minutes.

SDS Name: Kalama\* Benzyl Alcohol Technical

- CS15: Dermal contact rate 269 mg/minute for 0,33 minutes.
- CS16: covers amounts up to 4000 g (inhalation); 0,25 g (dermal).
- CS17: covers amounts up to 1000 g (inhalation); 0,5 g (dermal).
- CS18: covers amounts up to 1000 g (inhalation); Dermal contact rate 30 mg/minute for 180 minutes.
- CS19: covers amounts up to 1250 g (inhalation); Dermal contact rate 30 mg/minute for 480 minutes.
- CS20: Inhalation mass generation rate 0,5 g/second for spray duration 180 minutes; Dermal contact rate 110 mg/minute for 180 minutes.
- CS21: Dermal contact rate 50 mg/minute for 120 minutes.
- CS22: covers amounts up to 1000 g (inhalation); Dermal contact rate 30 mg/minute for 120 minutes.
- CS23: Inhalation mass generation rate 0,5 g/second for spray duration 1,2 minutes; Dermal contact rate 100 mg/minute for 1,2 minutes.
- CS24: covers amounts up to 0,1 g (inhalation); 0,1 g (dermal).
- CS25: covers amounts up to 100 g (inhalation); 100 g (dermal).
- CS26: covers amounts up to 100 g (inhalation).
- CS27: Inhalation mass generation rate 0,5 g/second for spray duration 1,2 minutes; Dermal contact rate 100 mg/minute for 1,2 minutes.
- CS28: covers amounts up to 0,1 g (inhalation); 0,1 g (dermal).
- CS29: covers amounts up to 550 g (inhalation); 5,5 g (dermal).
- CS30: covers amounts up to 1500 g (inhalation); 15 g (dermal).
- CS31: covers amounts up to 500 g (inhalation); 0,01 g (dermal).
- CS32: covers amounts up to 19 g (inhalation); 19 g (dermal).
- CS33: covers amounts up to 1000 g (dermal)
- CS34: covers amounts up to 0,65 g (inhalation); 0,65 g (dermal).
- CS35, CS39, CS43: covers amounts up to 500 g (inhalation); 0,01 g (dermal).
- CS36: covers amounts up to 19 g (inhalation); 19 g (dermal).
- CS37: covers amounts up to 1000 g (dermal).
- CS38: covers amounts up to 0,65 g (inhalation); 0,65 g (dermal).
- CS40: covers amounts up to 400 g (inhalation); 19 g (dermal).
- CS41: Inhalation mass generation rate 0,78 g/second for spray duration 0,41 minutes; Dermal contact rate 46 mg/minute for 0,41 minutes.
- CS42: covers amounts up to 16,2 g (inhalation); 0,16 g (dermal).
- CS44: covers amounts up to 260 g (inhalation); 19 g (dermal).
- CS45: Inhalation mass generation rate 0,39 g/second for spray duration 1,5 minutes; Dermal contact rate 46 mg/minute for 1,5 minutes.
- CS46: covers amounts up to 30 g (inhalation); 0,3 g (dermal).
- CS47: covers amounts up to 70 g (inhalation).

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**Frequency and duration of use/exposure:**

Duration: Unless otherwise stated, covers exposure up to 240 minutes:

- CS14, CS19: 480 minutes/event.
- CS7: 480 minutes/event (inhalation); 300 minutes/event (dermal).
- CS18, CS20, CS26: 180 minutes/event.
- CS22: 132 minutes/event.
- CS21: 120 minutes/event.
- CS29, CS30: 90 minutes/event.
- CS16, CS17, CS41, CS42: 60 minutes/event.
- CS47: 50 minutes/event.
- CS1: 45 minutes/event.
- CS11: 30 minutes/event.
- CS44-CS46: 25 minutes/event
- CS24, CS28: 20 minutes/event.
- CS6, CS32, CS34, CS36, CS38: 10 minutes/event.
- CS9, CS23, CS27: 5 minutes/event.
- CS31, CS35, CS39, CS43: 0,75 minutes/event.

Duration of activity (application/release):

- CS7: <=480 minutes (inhalation); <=300 minutes (dermal).
- CS14, CS19: <=480 minutes.
- CS25: <=240 minutes.
- CS18, CS20, CS26: <=180 minutes.
- CS21, CS22: <=120 minutes.
- CS29, CS30: <=90 minutes.
- CS16, CS17: <=60 minutes.
- CS47: <=50 minutes.
- CS1, CS4, CS10: <=30 minutes.
- CS3, CS8, CS24, CS28, CS40, CS44: <=20 minutes.
- CS2, CS6, CS32, CS34, CS36, CS38, CS42, CS46: <=10 minutes.
- CS9: <=5 minutes.
- CS5: <=2,83 minutes.
- CS11: <=2,25 minutes.
- CS45: <=1,5 minutes.
- CS23, CS27: <=1,2 minutes.
- CS41: <=0,41 minutes.
- CS12, CS13, CS15: <=0,33 minutes.
- CS31, CS35, CS39, CS43: <=0,3 minutes.

Frequency - covers use frequency:

- CS31, CS33, CS35, CS37, CS41, CS42, CS47: 1 time/day, 365 times/year.
- CS14, CS15: 0,41 times/day, 150 times/year.
- CS34, CS38: 0,351 times/day, 128 times/year.
- CS25, CS26: 0,33 times/day, 120 times/year.
- CS32, CS36, CS39, CS40: 0,285 times/day, 104 times/year.
- CS12, CS13: 0,25 times/day, 90 times/year.



SDS Name: Kalama\* Benzyl Alcohol Technical

- CS2, CS3, CS45, CS46: 0,142 times/day, 51 times/year.
- CS24, CS28: 0,071 times/day, 26 times/year.
- CS5: 0,033 times/day, 12 times/year.
- CS23, CS27: 0,022 times/day, 8 times/year.
- CS43, CS44: 0,011 times/day, 4 times/year.
- CS1, CS8: 0,008 times/day, 3 times/year.
- CS4, CS9, CS10, CS20, CS29: 0,005 times/day, 2 times/year.
- CS11, CS17-CS19, CS22: 0,003 times/day, 1 time/year.
- CS6: 0,001 times/day, 0,375 times/year.
- CS16: 0,0009 times/day, 0,33 times/year.
- CS21: 0,0005 times/day, 0,2 times/year.
- CS7, CS30: 0,0003 times/day, 0,125 times/year.

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

Inhalation factor = 1.

Dermal transfer factor: Unless otherwise stated, 1. CS33, CS37: 0,8.

Oral transfer factor = 1 (CS5, CS11, CS13, CS14, CS20, CS23, CS27, CS41, CS45).

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

Application temperature: Unless otherwise stated, 20 °C. CS26: 70 °C.

Body weight: Unless otherwise stated, 60 kg. CS12, CS15: 8.69 kg.

Inhalation exposure model - Unless otherwise stated, covers use in room size of 20 m3.

- CS1, CS44-CS46: room size of 10 m3.
- CS6, CS9, CS31, CS32, CS34-CS36, CS38, CS39, CS43: room size of 1 m3.
- CS7, CS13, CS16, CS29, CS30, CS40: room size of 58 m3.
- CS11, CS20, CS23, CS24, CS27, CS28: room size of 34 m3.
- CS14, CS25, CS26: room size of 16 m3.
- CS41, CS42: room size of 15 m3.
- CS47: room size of 2,5 m3.
- CS12, CS15, CS21, CS33, CS37: Not relevant.

Inhalation exposure model - Release area:

- CS1: 0,025 m2.
- CS2, CS8: 0,02 m2.
- CS3: 0,04 m2.
- CS4, CS7: 1 m2.
- CS6: 0,032 m2.
- CS9: 0,01 m2.
- CS10: 0,005 m2.
- CS16, CS29, CS30: 22 m2.
- CS17, CS22: 2 m2.
- CS18, CS19, CS40: 10 m2.
- CS31, CS35, CS39, CS43: 0,002 m2
- CS42: 1,7 m2.
- CS44: 0,19 m2.
- CS46: 6,4 m2.

Inhalation rate: Unless otherwise stated, 24,1 m3/day. CS19: 22,6 m3/day. CS47: 12,96 m3/day.

Skin contact area:

- CS1-CS3: up to 2 cm2.
- CS4, CS6, CS24, CS28, CS31, CS35, CS39, CS42-CS44, CS46: up to 215 cm2.
- CS5, CS7, CS22, CS23, CS27, CS29, CS30, CS34, CS38: up to 430 cm2.
- CS8-CS11, CS17-CS20: up to 960 cm2.
- CS12, CS15: up to 5000 cm2.
- CS13: up to 19000 cm2.
- CS16: up to 108 cm2.
- CS21, CS32, CS36, CS40: up to 1900 cm2.
- CS33, CS37: up to 17000 cm2.
- CS41, CS45: up to 22 cm2.

CS12: Rubbed surface 220000 m2; Dislodgeable amount 0,000082 g/cm2; Transfer coefficient: 0,6 cm2/s.

CS15: Rubbed surface 70000 m2; Dislodgeable amount 0,000082 g/cm2; Transfer coefficient: 0,6 cm2/s.

Ingestion rate:

- CS12: 10 mg/minute.
- CS15: 5 mg/minute.

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**Conditions and measures related to information and behavioral advice to consumers:**

Assessment tool: ConsExpo v4.1 for inhalation and dermal exposure.

Deviation from default scenario: Yes - can be one or more of the following: body weight, ventilation rate, airborne fraction of the non-volatile material, weight fraction of the non-volatile material, mass generation rate, area of release increases over time, inhalation rate, application duration, exposed area dermal, room volume, release area, applied amount, average molecular weight of matrix, exposure duration, spray duration.

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**Conditions and measures related to personal protection and hygiene:**

General ventilation: Unless otherwise stated, ventilation rate: 2 air changes/ hour.

- CS13, CS29, CS30, CS40: ventilation rate: 0.5 air changes/ hour.
- CS2, CS3. CS5, CS8-CS10, CS22: ventilation rate: 0.6 air changes/ hour.
- CS14, CS25, CS26: ventilation rate: 1 air change/ hour.
- CS11, CS23, CS24, CS27, CS28: ventilation rate: 1.5 air changes/ hour.
- CS17, CS41, CS42: ventilation rate: 2.5 air changes/ hour.
- CS16: ventilation rate: 3 air changes/ hour.

SDS Name: Kalama\* Benzyl Alcohol Technical

- CS12, CS15, CS21, CS33, CS37: Not relevant.

## 2.2 Control of environmental exposure

### Product characteristics:

Vapour pressure: 7 Pa at 20 °C

### Amounts used:

Daily wide dispersive use: <=0.0022 tons/day.

Percentage of tonnage used at regional scale: 10 %.

### 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): 1.0; (final release): 1.0.

Release fraction to wastewater from process (initial release): 1.0; (final release): 1.0. Local release rate: 2.2 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 ( Efficiency=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

### 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

Assessment method-Health: ConsExpo v4.1. Only highest figures are presented here.

Assessment method-Environment: EUSES 2.1.2.

### Health

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Consumer, long-term, systemic, Dermal	2,33 mg/kg bw/day	0,583	PC3 (CS15)
Consumer, long-term, systemic, Inhalation	3,2 mg/m3	0,593	PC28 (CS26)
Consumer, long-term, systemic, Oral	1,7 mg/kg bw/day	0,425	PC3 (CS12)
Consumer, long-term, systemic, Combined routes	N/A	0,938	PC3 (CS15)
Consumer, short-term, systemic, Dermal	16,5 mg/kg bw/day	0,825	PC9a (CS20)
Consumer, short-term, systemic, Inhalation	25,6 mg/m3	0,948	PC28 (CS26)
Consumer, short-term, systemic, Combined routes	N/A	0,981	PC9a (CS18)

### Environment

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Freshwater	0,019 mg/L	0,019	
Freshwater sediment	0,096 mg/kg dw	0,018	
Marine water	0,00186 mg/L	0,019	
Marine water sediment	0,0096 mg/kg dw	0,018	
Soil	0,014 mg/kg dw	0,03	
STP	0,139 mg/L	<0,01	
Human via environment, Inhalation	0,000103 mg/m3	<0,01	
Human via environment, Oral	0,000994 mg/kg bw/day	<0,01	
Human 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 (17): Service life (professional worker and consumers) - Wide dispersive indoor use of paper articles - baby wipes

### 1. Exposure scenario (17)

#### Short title of the exposure scenario:

Service life (professional worker and consumers) - Wide dispersive indoor use of paper articles - baby wipes

#### List of use descriptors:

Environmental release category (ERC): ERC11a

Article category (AC): AC8

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

CS1: ERC11a (professional use).

CS2: ERC11a (consumer use).

ERC11a Widespread use of articles with low release (indoor).

#### Further explanations:

AC8 Paper articles.

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

##### General:

For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

#### 2.2 Control of environmental exposure

##### Product characteristics:

Vapour pressure: 7 Pa at 20 °C

##### Amounts used:

Daily wide dispersive use: <=0,000055 tons/day (CS1), <=0,000165 tons/day (CS2).

Percentage of tonnage used at regional scale: 10 %.

##### 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.

Professional use.

Consumer use.

Release fraction to air from process (initial release): 0,0005; (final release): 0,0005.

Release fraction to wastewater from process (initial release): 0,0005; (final release): 0,0005. Local release rate: 0,0000275 kg/day (CS1), 0,0000825 kg/day (CS2).

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 ( Efficiency=87.36%).

Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).

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

Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)

##### 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

Assessment method-Environment: EUSES 2.1.2.

#### Environment

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Freshwater	0,00471 mg/L	<0,01	
Freshwater sediment	0,024 mg/kg dw	<0,01	
Marine water	0,000468 mg/L	<0,01	
Marine water sediment	0,00242 mg/kg dw	<0,01	
Soil	0,00927 mg/kg dw	0,02	
STP	0,00000174 mg/L (CS1) / 0,00000521 mg/L (CS2)	<0,01 (CS1) / <0,01 (CS2)	
Human via environment, Inhalation	0,000102 mg/m3	<0,01	
Human via environment, Oral	0,000862 mg/kg bw/day	<0,01	

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Human 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**

**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.