

# Safety Data Sheet

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

Revision date: 4/22/2021  
 Supersedes date: 2/9/2021

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

### 1.1. Product identifier:

**Product trade name:** Kalama\* Florosol S  
**Company product number:** FLOROSOLS  
**REACH registration number:** 01-0000015458-64-0004  
**Substance name:** A mixture of: cis-tetrahydro-2-isobutyl-4-methylpyran-4-ol; trans-tetrahydro-2-isobutyl-4-methylpyran-4-ol  
**Substance identification number:** EC 405-040-6; Index 603-101-00-3  
**Other means of identification:** 32202; 2H-Pyran-4-ol, tetrahydro-4-methyl-2-(2-methylpropyl)-

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

**Uses:** Fragrance ingredient. Industrial applications. Professional applications. Consumer applications. See Annex for covered uses.  
**Uses advised against:** Consumer products with potential for significant oral contact.

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

**Manufacturer/Supplier:** Emerald Kalama Chemical Limited  
 Dans Road  
 Widnes, Cheshire WA8 0RF  
 United Kingdom  
 Telephone: +44 (0) 151 423 8000  
**EU Only Representative:** Penman Consulting bvba  
 Avenue des Arts 10  
 B-1210 Brussels  
 Belgium  
 Telephone: +32 (0) 2 403 7239  
 email: pcbvba10@penmanconsulting.com  
**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:

Eye Irritation, category 2, H319  
 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:

H319 Causes serious eye irritation.

##### Precautionary statements:

P264 Wash skin thoroughly after handling.

P280 Wear eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

SDS Name: Kalama\* Florosol S

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>
0063500-71-0	Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	98-100	Eye Irrit. 2	H319
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>REACH Registration No.</u>	<u>EC/List Number</u>	
0063500-71-0	Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	01-0000015458-64-0004	405-040-6	
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>M-factor</u>	<u>SCLs</u>	<u>ATE</u>
0063500-71-0	Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	N/A	N/E	Not Available

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

**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:

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

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

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media:

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

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

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

**5.3. Advice for firefighters:**

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

See section 9 for additional information.

**SECTION 6: Accidental release measures**

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

See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Eliminate ignition sources. 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. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye contact. Avoid repeated or prolonged skin contact. Avoid inhalation of aerosol, mist, spray, fume or vapor. Avoid drinking, tasting, swallowing or ingesting this product. Wash contaminated clothing before reuse. Provide eyewash fountains and safety showers in the work area.

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

Store cool and dry, under well-ventilated conditions. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Empty container contains residual product which may exhibit hazards of product.

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

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

**SECTION 8: Exposure controls / personal protection**

**8.1. Control parameters:**

**Occupational exposure limits (OEL):**

<b>Chemical Name</b> Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	<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> Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	<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):**

**Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)**

Population	Route	Acute (local)	Acute (systemic)	Long Term (local)	Long Term (systemic)
Workers	Inhalation	N/E	N/E	N/E	44,1 mg/m3
Workers	Dermal	N/E	N/E	N/E	41,7 mg/kg bw/day
General population	Inhalation	N/E	N/E	N/E	13 mg/m3

Population	Route	Acute (local)	Acute (systemic)	Long Term (local)	Long Term (systemic)
General population	Dermal	N/E	N/E	N/E	25 mg/kg bw/day
General population	Oral	N/E	N/E	N/E	7,5 mg/kg bw/day

**Predicted No Effect Concentration (PNECs):****Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)**

Compartment	PNEC
Freshwater	0,094 mg/L
Freshwater sediment	0,412 mg/kg dw
Marine water	0,0094 mg/L
Marine water sediment	0,0412 mg/kg dw
Intermittent releases	0,94 mg/L
Soil	0,0902 mg/kg dw
STP	10 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 material for protective gloves: PVC (polyvinyl chloride). 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:** Respiratory protection is not needed with proper ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

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

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

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties:**

<b>Physical state:</b>	Liquid
<b>Colour:</b>	Colorless to light yellow
<b>Odour:</b>	Floral
<b>Odour threshold:</b>	Not Available
<b>Melting point/Freezing point:</b>	<-100°C (<-148°F)
<b>Boiling point °C:</b>	227 °C
<b>Boiling point °F:</b>	440 °F
<b>Flammability:</b>	Not flammable
<b>Lower and upper explosion limit:</b>	LEL: Not Available UEL: Not Available
<b>Flash point:</b>	106 °C (223 °F) Closed Cup
<b>Auto-ignition temperature:</b>	328°C (622°F)
<b>Decomposition temperature:</b>	Not Available
<b>pH:</b>	Not Available
<b>Kinematic viscosity:</b>	247 mm <sup>2</sup> /s (234 mPa.s) @ 20°C
<b>Solubility in water:</b>	23-24 g/L @ 23°C
<b>Partition coefficient n-octanol/water (log value):</b>	1.65 (23°C)
<b>Vapour pressure:</b>	1 Pa @ 20°C
<b>Density and/or relative density:</b>	0.943-0.953
<b>Relative vapour density:</b>	Not Available
<b>Particle characteristics:</b>	Not Applicable
<b>% Volatile by weight:</b>	Not Available
<b>VOC:</b>	Not Available

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: Not Available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity:

None known.

### 10.2. Chemical stability:

This product is stable.

### 10.3. Possibility of hazardous reactions:

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid:

Excessive heat and ignition sources.

### 10.5. Incompatible materials:

Avoid contact with strong oxidizing agents.

### 10.6. Hazardous decomposition products:

Carbon dioxide, carbon monoxide and hydrocarbons.

## SECTION 11: Toxicological information

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

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

<u>Chemical Name</u>	<u>Inhalation LC50</u>	<u>Species</u>	<u>Oral LD50</u>	<u>Species</u>	<u>Dermal LD50</u>	<u>Species</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	N/E	N/E	>2000 mg/kg	Rat/ adult	>2000 mg/kg	Rabbit/ adult

**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>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Mild irritant	Rabbit/ adult

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

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Irritant	Rabbit/ adult

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

<u>Chemical Name</u>	<u>Skin sensitisation</u>	<u>Species</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Non-sensitizer	Guinea Pig/ adult

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

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). TETRAHYDRO-2-ISOBUTYL-4-METHYLPYRAN-4-OL, MIXED ISOMERS (cis and trans): Mutagenic assays were negative for both in vivo and in vitro assays.

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). TETRAHYDRO-2-ISOBUTYL-4-METHYLPYRAN-4-OL, MIXED ISOMERS (cis and trans): Reproductive toxicity, oral, rats: NOAEL (no-observed adverse-effect-level) 1113 mg/kg bw/day (OECD 443). Reproductive toxicity, dermal, rats: NOAEL (no-observed adverse-effect-level) 1000 mg/kg bw/day (OECD 414). Developmental toxicity, oral, rats: NOAEL of 1113 mg/kg bw/day (OECD 443). Developmental toxicity dermal, rats: NOAEL (no-observed-adverse-effect level), maternal toxicity=1000 mg/kg bw/day; NOAEL, developmental toxicity=1000 mg/kg bw/day (OECD 414).

**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).

SDS Name: Kalama\* Florosol S

are not met). TETRAHYDRO-2-ISOBUTYL-4-METHYLPYRAN-4-OL, MIXED ISOMERS (cis and trans): Repeated dose toxicity study: NOAEL (No-Observed-Adverse-Effect-Level), oral, rat - 125 mg/kg bw/day; NOAEL, dermal, rat - 1000 mg/kg bw/day.

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

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

**Information on likely routes of exposure:**

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

**Eyes:** Causes serious eye irritation.

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

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

**Ingestion:** Ingestion may cause irritation.

**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>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Fish	LC50 354 mg/L (96 hours)	N/E	N/E
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Invertebrates	EC50 320 mg/L (48 hours)	N/E	N/E
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Algae	EC50 >100 mg/L (72 hours)	EC50 >1000 mg/L(72 hours)	EC10 232 mg/L(72 hours)
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Micro-organisms	EC50 >1000 mg/L (3 hours)		

**12.2. Persistence and degradability:**

<u>Chemical Name</u>	<u>Biodegradation</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	Inherently biodegradable (OECD 301D)

**12.3. Bioaccumulative potential:**

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	N/E	1.65 (23°C)

**12.4. Mobility in soil:**

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Tetrahydro-2-isobutyl-4-methylpyran-4-ol, mixed isomers (cis and trans)	25 (OECD 121)

**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**

Not Applicable

**SECTION 15: Regulatory information**

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

**Europe REACH (EC) 1907/2006:** Applicable components are registered, exempt or otherwise compliant. EU REACH is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials 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. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

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

**Other EU information:** No Additional Information

**National regulations:** No Additional Information

**Chemical inventories:**

<u>Regulation</u>	<u>Status</u>
Australian Inventory of 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):

H319 Causes serious eye irritation.

**Reason for revision:** Changes in Section(s): 8, 11, 12, Annex

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

### Legend:

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

ACGIH: American Conference of Governmental Industrial Hygienists

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:

Product Compliance Department

Emerald Performance Materials, LLC

1499 SE Tech Center Place, Suite 300

Vancouver, WA 98683

United States

## Annex

### Exposure Scenarios

#### Substance information:

Name of substance: 2H-Pyran-4-ol, tetrahydro-4-methyl-2-(2-methylpropyl)-.

EC# 405-040-6 / CAS# 63500-71-0

REACH Registration number: 01-0000015458-64-0004.

#### List of exposure scenarios:

ES1: Compounding

ES2: Formulation.

ES3: Use at industrial sites - Industrial use of washing and cleaning products

ES4: Use at industrial sites - Use as an intermediate (under strictly controlled conditions)

ES5: Use by professional workers - Professional use in polishes, wax blends, washing and cleaning products

ES6: Consumer use - Consumer use in polishes, wax blends, washing and cleaning products

ES7: Consumer use - Consumer end-use of air care products

ES8: Consumer use - Consumer end-use of cosmetics

ES9: Consumer use - Consumer end-use of biocides

#### General remarks:

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterization was performed.

The first tier worker exposure assessments have at first instance been performed using EasyTRA 4.4.0 and ECETOC TRA version 3.0 (ECETOC TRA v3). For all consumer contributing scenarios second tier consumer exposure assessments have been performed using ConsExpo v4.1.

### Exposure scenario (1): Compounding

#### 1. Exposure scenario (1)

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

Compounding

##### List of use descriptors:

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

Environmental release category (ERC): ERC2

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

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

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

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



SDS Name: Kalama\* Florosol S

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

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

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

PROC15 Use as laboratory reagent. Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace).

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

ERC2 Formulation into mixture.

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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**

**General:**

Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Wear chemical resistant gloves in combination with basic employee training. Avoid contact with eyes.

**Product characteristics:**

Concentration of substance:

- PROC8a, PROC9: Up to 25% (a linear concentration reduction approach is used).

- PROC3, PROC5: Up to 25%.

- PROC1, PROC8b, PROC15: Up to 100%.

Physical state: liquid.

Vapour pressure: 1 Pa.

Fugacity: Low.

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

Duration: 5 days/week

- PROC3, PROC5, PROC8a: 1-4 hours/day.

- PROC1, PROC8b, PROC9: 15 minutes-1 hour/day.

- PROC15: <15 minutes/day.

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

Exposed skin surface:

- PROC1, PROC3, PROC15: 240 cm<sup>2</sup> (one hand, face side only).

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

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

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

Location: Indoor use.

Domain: Industrial use.

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

General ventilation:

- PROC1, PROC3, PROC5, PROC8b, PROC9, PROC15: Basic general ventilation (1-3 air changes per hour): 0%.

- PROC8a: Enhanced general ventilation (5-10 air changes per hour): 70%.

Containment:

- PROC1: Closed system (minimal contact during routine operations).

- PROC3: Closed batch process with occasional controlled exposure.

- PROC5, PROC8a, PROC8b, PROC9, PROC15: No.

Local exhaust ventilation:

- PROC1, PROC8a, PROC9, PROC15: Not required.

- PROC3, PROC5: Yes (90% effectiveness).

- PROC8b: Yes (95% effectiveness).

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.

Dermal protection:

- PROC1, PROC3, PROC8a, PROC8b, PROC9, PROC15: Yes (chemically resistant gloves conforming to EN374 with basic employee training), Gloves APF 10 (minimum efficiency dermal: 90%).

- PROC5: Yes (chemically resistant gloves conforming to EN374 with specific activity training), Gloves APF 20 (minimum efficiency dermal: 95%).

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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:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Assessment method-Health: EasyTRA 4.4.0 and ECETOC TRA Worker v3. Only highest figures are presented here.

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**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	0,032888	PROC8b
Worker, long-term, systemic, Inhalation	3,589 mg/m3	0,081381	PROC15
Worker, long-term, systemic, Combined routes	0,546988 mg/kg bw/day	0,082204	PROC15

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. Duration: 5 days/week. PROC3, PROC5, PROC8a: 1-4 hours/day. PROC1, PROC8b, PROC9: 15 minutes-1 hour/day. PROC15: <15 minutes. Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training). PROC1, PROC3, PROC8a, PROC8b, PROC9, PROC15: Gloves APF 10 (minimum efficiency dermal: 90%). PROC5: Gloves APF 20 (minimum efficiency dermal: 95%). Concentration of substance: PROC8a, PROC9: Up to 25% (a linear concentration reduction approach is used). PROC3, PROC5: Up to 25%. PROC1, PROC8b, PROC15: Up to 100%.

#### Exposure scenario (2): Formulation

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

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

Formulation

###### List of use descriptors:

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

Environmental release category (ERC): ERC2

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

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

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

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

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

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

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

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

PROC15 Use as laboratory reagent. Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace).

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

ERC2 Formulation into mixture.

###### Further explanations:

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

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

#### 2. Conditions of use affecting exposure

##### 2.1 Control of workers exposure

###### General:

Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Wear chemical resistant gloves in combination with basic employee training. Avoid contact with eyes.

PROC8a, PROC9, PROC14: In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

###### Product characteristics:

Concentration of substance:

- PROC1, PROC3, PROC5, PROC8b, PROC15: Up to 25% (a linear concentration reduction approach is used).

- PROC8a, PROC9, PROC14: Up to 1%.

Physical state: liquid.

Vapour pressure: 1 Pa.

Fugacity: Low.

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

Duration: 5 days/week

- PROC3, PROC5: 1-4 hours/day.

- PROC1, PROC8b: 15 minutes-1 hour/day.

- PROC15: <15 minutes/day.

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

Exposed skin surface:

- PROC1, PROC3, PROC15: 240 cm<sup>2</sup> (one hand, face side only).

- PROC5: 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.

**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).

- PROC3: Closed batch process with occasional controlled exposure.

- PROC5, PROC8b, PROC15: No.

Local exhaust ventilation: Not required.

Occupational Health and Safety Management System: Advanced.

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

Respiratory protection: Not required.

Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training), Gloves APF 10 (minimum efficiency 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:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Assessment method-Health: EasyTRA 4.4.0 and ECETOC TRA Worker v3. Only highest figures are presented here.

**Health**

<b>Effect/Compartment</b>	<b>Exposure estimate/PEC</b>	<b>RCR</b>	<b>Notes</b>
Worker, long-term, systemic, Dermal	0,342857 mg/kg bw/day	0,008222	PROC5, PROC8b
Worker, long-term, systemic, Inhalation	5,383 mg/m3	0,122072	PROC5
Worker, long-term, systemic, Combined routes	1,112 mg/kg bw/day	0,130294	PROC5

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. Duration: 5 days/week. PROC3, PROC5: 1-4 hours/day. PROC1, PROC8b: 15 minutes-1 hour/day. PROC15: <15 minutes. Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training). Gloves APF 10 (minimum efficiency dermal: 90%). Concentration of substance: PROC1, PROC3, PROC5, PROC8b, PROC15: Up to 25% (a linear concentration reduction approach is used). PROC8a, PROC9, PROC14: Up to 1%.

**Exposure scenario (3): Use at industrial sites - Industrial use of washing and cleaning products****1. Exposure scenario (3)****Short title of the exposure scenario:**

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

**List of use descriptors:**

Product category (PC): PC35

Process category (PROC): PROC1, PROC2, PROC4, PROC7, PROC8b, PROC10, PROC13

Environmental release category (ERC): ERC4

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

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.  
 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Chemical production where opportunity for exposure arises.

PROC7 Industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

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

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

PROC13 Treatment of articles by dipping and pouring.

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

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

**Further explanations:**

PC35 Washing and cleaning products.

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

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

In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

**Product characteristics:**

Concentration of substance: Up to 1%.

**2.2 Control of environmental exposure****General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**3. Exposure estimation and reference to its source****Effect/Compartment****Exposure estimate/PEC****RCR****Notes**

Not Applicable

In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

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

Concentration of substance: Up to 1%.

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

Use at industrial sites - Use as an intermediate (under strictly controlled conditions)

**List of use descriptors:**

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

Environmental release category (ERC): ERC6a

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

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

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

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

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

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

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

ERC6a Use of intermediate.

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:**

Intermediate under strictly controlled conditions - exposure estimation and risk characterisation does not need to be performed.

**2.2 Control of environmental exposure****General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

**3. Exposure estimation and reference to its source****Effect/Compartment****Exposure estimate/PEC****RCR****Notes**

Not Applicable

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**

Use as an intermediate (under strictly controlled conditions).

**Exposure scenario (5): Use by professional workers - Professional use in polishes, wax blends, washing and cleaning products****1. Exposure scenario (5)****Short title of the exposure scenario:**

Use by professional workers - Professional use in polishes, wax blends, washing and cleaning products

**List of use descriptors:**

Product category (PC): PC31, PC35

Process category (PROC): PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13

Environmental release category (ERC): ERC8a, ERC8d

**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.

PROC4 Chemical production where opportunity for exposure arises.

SDS Name: Kalama\* Florosol S

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

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

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

PROC11 Non industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC13 Treatment of articles by dipping and pouring.

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

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

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

**Further explanations:**

PC31: Polishes and wax blends.

PC35: Washing and cleaning products (including solvent based 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:**

In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

**Product characteristics:**

Concentration of substance: Up to 1%.

**2.2 Control of environmental exposure**

**General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

**Effect/Compartment**

**Exposure estimate/PEC**

**RCR**

**Notes**

Not Applicable

In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

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

**Health**

Concentration of substance: Up to 1%.

**Exposure scenario (6): Consumer use - Consumer use in polishes, wax blends, washing and cleaning products**

**1. Exposure scenario (6)**

**Short title of the exposure scenario:**

Consumer use - Consumer use in polishes, wax blends, washing and cleaning products

**List of use descriptors:**

Product category (PC): PC31, PC35

Environmental release category (ERC): ERC8a, ERC8d

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

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

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

**Further explanations:**

PC31: Polishes and wax blends.

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

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

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**General:**

Based on current knowledge there are no preparations / formulations which contain this substance in concentrations > 1%. Assessment of uses of this substance in consumer products has not been performed as there were no end products identified which contain more than 1% of this substance. In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

**Product characteristics:**

Concentration of substance: Up to 1%.

**2.2 Control of environmental exposure**

**General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

**Effect/Compartment**

**Exposure estimate/PEC**

**RCR**

**Notes**

Not Applicable

SDS Name: Kalama\* Florosol S

In accordance to the Article 14 (2a-f) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation does not need to be performed if the substance in a preparation is less than 1%.

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

##### Health

Concentration of substance: Up to 1%.

#### Exposure scenario (7): Consumer use - Consumer end-use of air care products

##### 1. Exposure scenario (7)

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

Consumer use - Consumer end-use of air care products

###### List of use descriptors:

Product category (PC): PC3

Environmental release category (ERC): ERC8a

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

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

###### Further explanations:

PC3 Air care products:

- CS1: Electrical evaporators.

- CS2: Air care products - concentration <1%.

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:

CS2: Assessment of uses of this substance in consumer products has not been performed as there were no end products identified which contain more than 1% of this substance.

###### Product characteristics:

Concentration of substance in product:

- CS1: Up to 7%.

- CS2: Up to 1%.

Exposure via inhalation route: CS1: Yes.

Exposure via dermal route: Dermal exposure assumed to be negligible.

Spray: CS1: Yes.

Airborne fraction of the non-volatile material: CS1: 100%.

Weight fraction of the non-volatile material: CS1: 100%

Applied amounts for each use event: CS1: Inhalation mass generation rate 0.000022 g/sec for spray duration 2.88E4 sec.

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

Duration covers exposure up to: CS1: 8 hours/event.

Frequency - covers use frequency: CS1: 150 times/year.

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

Inhalation exposure model - CS1: covers use in room size of 16 m3.

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

General ventilation:ventilation rate: CS1: 1 l/ hour.

###### 2.2 Control of environmental exposure

###### General:

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Assessment method-Health: ConsExpo v4.1.

##### Health

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Consumer, long-term, systemic, Inhalation	0,02992 mg/m3	0,002302	CS1 Electrical evaporators
Consumer, long-term, systemic, Combined routes	0,005048 mg/kg bw/day	0,002302	CS1 Electrical evaporators

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. Concentration of substance in product: CS1: Up to 7%. CS2: Up to 1%.

#### Exposure scenario (8): Consumer use - Consumer end-use of cosmetics

##### 1. Exposure scenario (8)

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

Consumer use - Consumer end-use of cosmetics

###### List of use descriptors:

Product category (PC): PC28, PC39

Environmental release category (ERC): ERC8a

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

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

**Further explanations:**

PC28: Perfumes, fragrances.

PC39: Cosmetics, personal care products.

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

**2. Conditions of use affecting exposure**

**2.1 Control of consumer exposure**

**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**

**General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

Effect/Compartment	Exposure estimate/PEC	RCR	Notes
Not Applicable			

Not Applicable

For cosmetic and personal care products, risk assessment is not required under REACH as human health is covered by alternative legislation.

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

**Health**

No other specific measures identified.

**Exposure scenario (9): Consumer use - Consumer end-use of biocides**

**1. Exposure scenario (9)**

**Short title of the exposure scenario:**

Consumer use - Consumer end-use of biocides

**List of use descriptors:**

Product category (PC): PC8

Environmental release category (ERC): ERC8a, ERC8d

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

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

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

**Further explanations:**

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

- CS1: Insecticides/repellents - liquid/adult.

- CS2: Insecticides/repellents - liquid/child.

- CS3: Insecticides/repellents spray.

- CS4: Insecticides/repellents - spray post application/child.

- CS5: Disinfectants, pest control - concentration <1%.

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:**

CS5: Assessment of uses of this substance in consumer products has not been performed as there were no end products identified which contain more than 1% of this substance.

**Product characteristics:**

Concentration of substance in product:

- CS1, CS2, CS3, CS4: Up to 1.4%.

- CS5: Up to 1%.

Exposure via inhalation route: CS3: Yes. CS1, CS2, CS4: Not relevant.

Exposure via dermal route: Yes.

Oral contact foreseen: CS3: No. CS1, CS2, CS4: Yes.

Spray: CS1, CS2, CS4: No. CS3: Yes.

Airborne fraction of the non-volatile material: CS3: 30%.

Weight fraction of the non-volatile material: CS3: 50%

**Amounts used:**

Applied amounts for each use event:

- CS1: 6 g.

- CS2: 1.5 g.

- CS3: Inhalation mass generation rate 1.1 g/sec for spray duration 19.8 sec; Dermal contact rate 269 mg/min for 19.8 sec.

Skin contact area - covers skin contact area up to:

- CS1, CS3: 17500 cm<sup>2</sup>.

- CS2, CS4: 4800 cm<sup>2</sup>.

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

Duration covers exposure up to:

SDS Name: Kalama\* Florosol S

- CS1, CS2: 180 minutes/event (dermal, oral).
  - CS3: 240 minutes/event (inhalation); 19.8 seconds/event (dermal).
  - CS4: 3600 seconds/event (dermal); 60 minutes/event (oral).
- Frequency - covers use frequency:
- CS1, CS2: 54 times/year.
  - CS3, CS4: 90 times/year.

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

- Ingestion rate:
- CS1: 0.00133 mg/min.
  - CS2: 0.00083 mg/min.
  - CS4: 0.010496 mg/min.

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

- CS3: Covers use in room size of 58 m<sup>3</sup>.  
CS4: Rubbed surface 22 m<sup>2</sup>; Dislodgeable amount 0.000082 g/cm<sup>2</sup>; Transfer coefficient: 1.667 cm<sup>2</sup>/s.  
Uptake fraction: 100%.

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

General ventilation: ventilation rate: CS3: 0.5 l/ hour.

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**2.2 Control of environmental exposure**

**General:**

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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

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

**Health**

<u>Effect/Compartment</u>	<u>Exposure estimate/PEC</u>	<u>RCR</u>	<u>Notes</u>
Consumer, long-term, systemic, Dermal	0,35752 mg/kg bw/day	0,014301	CS2 Insecticides/repellents - liquid/child
Consumer, long-term, systemic, Inhalation	0,005683 mg/m <sup>3</sup>	0,000437	CS3 Insecticides/repellents spray
Consumer, long-term, systemic, Oral	0,00025 mg/kg bw/day	0,000033	CS4 Insecticides/repellents - spray post application/child
Consumer, long-term, systemic, Combined routes	0,357556 mg/kg bw/day	0,014306	CS2 Insecticides/repellents - liquid/child

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

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**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.

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