



Safety Data Sheet

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

Revision date: 9/20/2016

Supersedes: 4/4/2016

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

1.1. Product identifiers:

Product trade name: Kalama* K-FLEX* 975P
Company product number: FLEX975P
REACH registration number: Mixture.
Other means of identification: Not Available

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

Uses: Plasticizer. See Annex for covered uses.
Uses advised against: None identified

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

Manufacturer/Supplier: EMERALD KALAMA CHEMICAL B.V.
 Havennr. 4322 - Montrealweg 15
 3197 KH Rotterdam-Botlek - THE NETHERLANDS
 Telephone: +31 88 888 0512/-0509 - FAX: +31 20 794 8466
 kflex.emea@emeraldmaterials.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); +001-813-248-0585 (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:

Not classified as hazardous under any GHS hazard class according to Regulation (EC) 1272/2008 (CLP).

2.2. Label elements:

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

Hazard pictogram(s): Not Applicable
Signal word: Not Applicable
Hazard statements: Not Applicable
Precautionary statements: Not Applicable
Supplemental information: No Additional Information

2.3. Other hazards:

PBT/vPvB criteria: This product does not meet the PBT and vPvB classification criteria.
Other hazards: No Additional Information

See Section 11 for toxicological information.

SECTION 3: Composition/information on ingredients

3.2. Mixture:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>	<u>Classification</u>	<u>H Statements</u>
0027138-31-4	Dipropylene glycol dibenzoate	15-20	Aquatic Chronic 3	H412
<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>	<u>REACH Registration No.</u>	<u>EC Number</u>

SDS Name: Kalama* K-FLEX* 975P

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>	<u>REACH Registration No.</u>	<u>EC Number</u>
0027138-31-4	Dipropylene glycol dibenzoate	15-20	01-2119529241-49-0002	248-258-5

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

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

SECTION 4: First aid measures

4.1. Description of first aid measures:

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

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

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

Inhalation: If affected, remove to fresh air. Get medical attention if symptoms occur.

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 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 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.

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 laundry before reuse.

6.4. References to other sections:

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

SECTION 7: Handling and storage**7.1. Precautions for safe handling:**

As with any chemical product, use good laboratory/workplace procedures. 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. Keep away from heat, sparks and open flames. 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. Empty container contains residual product which may exhibit hazards of product. Do not reuse empty container without commercial cleaning or reconditioning. Plasticizer products will soften plastic materials and as a result they should not be transported in piping systems constructed from these materials.

7.3. Specific end use(s):

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

SECTION 8: Exposure controls / personal protection**8.1. Control parameters:****Occupational exposure limits (OEL):**

<u>Chemical Name</u>	<u>EU OELV</u>	<u>EU IOELV</u>	<u>ACGIH - TWA/Ceiling</u>	<u>ACGIH - STEL</u>
Dipropylene glycol dibenzoate	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>UK WEL</u>	<u>Ireland OEL</u>		
Dipropylene glycol dibenzoate	N/E	N/E		

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

Derived No Effect Levels (DNELs) - Workers:

<u>Chemical Name</u>	<u>Inhalation-Acute (local)</u>	<u>Inhalation-Acute (systemic)</u>	<u>Inhalation-Long Term (local)</u>	<u>Inhalation-Long Term (systemic)</u>
Dipropylene glycol dibenzoate	N/E	35.08 mg/m ³	N/E	8.8 mg/m ³
<u>Chemical Name</u>	<u>Dermal-Acute (local)</u>	<u>Dermal-Acute (systemic)</u>	<u>Dermal-Long Term (local)</u>	<u>Dermal-Long Term (systemic)</u>
Dipropylene glycol dibenzoate	N/E	170 mg/kg bw/day	N/E	10 mg/kg bw/day

Predicted No Effect Concentration (PNECs):

<u>Chemical Name</u>	<u>Freshwater</u>	<u>Marine water</u>	<u>Intermittent releases</u>	<u>Soil</u>
Dipropylene glycol dibenzoate	3.7 ug/L	0.37 ug/L	37 ug/L	1 mg/kg soil ww
<u>Chemical Name</u>	<u>Sediment (freshwater)</u>	<u>Sediment (marine)</u>	<u>STP</u>	<u>Oral</u>
Dipropylene glycol dibenzoate	1.49 mg/kg sediment dw; 0.323 mg/kg sediment ww	0.149 mg/kg sediment dw; 0.0323 mg/kg sediment ww	10 mg/L	333 mg/kg food

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

8.2. Exposure controls:

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

Individual protection measures, such as personal protective equipment:

Eye/face protection: Wear eye protection.

Hand protection: Avoid skin contact when mixing or handling the material by wearing impervious and chemical resistant gloves. In case of prolonged immersion or frequently repeated contact, gloves with breakthrough times greater than 240 minutes (protection class 5 or greater) are recommended. For brief contact or splash applications, gloves with breakthrough times of 10 minutes or greater are recommended (protection class 1 or greater). The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374. Suitability and durability of a glove is dependent on usage (e.g. frequency and duration of contact, other chemicals which may be handled, chemical resistance of glove material and dexterity). Always seek advice of the glove supplier as to the most suitable glove material.

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

Respiratory protection: 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:**

Form:	Liquid	pH:	Not Available
Appearance:	Colorless to light yellow	Relative density:	1.15
Odour:	Ester-like	Partition coefficient (n-octanol/water):	Not Available
Odour threshold:	Not Available	% Volatile by weight:	2.0%
Solubility in water:	Negligible	VOC:	2.0% ASTM D2369
Evaporation rate:	Slower than n-butyl acetate	Boiling point °C:	215°C @ 5 mm Hg
Vapour pressure:	<0.1 mm Hg @ 20°C	Boiling point °F:	419°F @ 5 mm Hg
Vapour density:	Heavier than air	Flash point:	202°C (396°F) ASTM D-92
Viscosity:	63 cSt @ 25°C	Autoignition temperature:	Not Available
Melting point/Freezing point:	4°C (39°F)	Flammability (solid, gas):	Not Applicable (liquid)
Oxidising properties:	Not oxidizing	Flammability or explosive limits:	LFL/LEL: Not Available
Explosive properties:	Not explosive		UFL/UEL: Not Available
Decomposition temperature:	Not Available	Surface tension:	44.8 dynes/cm @ 25°C (ASTM D1331)

9.2. Other information:

Amounts specified are typical and do not represent a specification.

SECTION 10: Stability and reactivity**10.1. Reactivity:**

None known.

10.2. Chemical stability:

This product is stable.

10.3. Possibility of hazardous reactions:

Hazardous polymerization will not occur.

10.4. Conditions to avoid:

Excessive heat and ignition sources.

10.5. Incompatible materials:

Avoid strong acids, bases, and oxidizing agents. Avoid contact with phenols.

10.6. Hazardous decomposition products:

Carbon dioxide, carbon monoxide and hydrocarbons.

SECTION 11: Toxicological information

11.1. Information on toxicological effects:

Information on likely routes of exposure:

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

Eyes: May cause eye irritation.

Skin: May cause skin irritation.

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

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

Acute toxicity information: Not classified (based on available data, the classification criteria are not met). ATEMix (oral): >4000 - <5000 mg/kg. ATEMix (dermal): >2000 mg/kg. ATEMix (inhal.): >200 mg/l, 4 hours.

<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>
Dipropylene glycol dibenzoate	>200 mg/L (aerosol, 4 hours)	Rat/ adult	3914 mg/kg	Rat/ adult	>2000 mg/kg	Rat/ 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>
Dipropylene glycol dibenzoate	Slight irritant	Rabbit/ adult

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

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Dipropylene glycol dibenzoate	Slight 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>
Dipropylene glycol dibenzoate	Non-sensitizer	Guinea Pig/ adult

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

Germ cell mutagenicity: Not classified (based on available data, the classification criteria are not met). DIETHYLENE GLYCOL DIBENZOATE: In vitro testing showed no mutagenic activity. DIPROPYLENE GLYCOL DIBENZOATE: In vitro testing showed no mutagenic activity.

Reproductive toxicity: Not classified (based on available data, the classification criteria are not met). DIETHYLENE GLYCOL DIBENZOATE: Animal studies indicated a NOAEL (no-observed-adverse-effect-level) for maternal toxicity of 1000 mg/kg/day and for fetal toxicity of 500 mg/kg/day (rats). DIPROPYLENE GLYCOL DIBENZOATE: Reproductive toxicity, 2-generation oral study in rats: NOAEL (no-observed adverse-effect-level) 500 mg/kg bw/day. Developmental toxicity, oral, rats: NOAEL of 500 mg/kg bw/day.

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

Specific target organ toxicity (STOT) - repeated exposure: Not classified (based on available data, the classification criteria are not met). DIETHYLENE GLYCOL DIBENZOATE: A 13-week dietary study in rats at a dose of 2500 mg/kg/day observed decreased body weights, blood, spleen and caecum effects which showed completed recovery within 4 weeks after exposure. NOAEL (No-Observed-Adverse-Effect-Level), oral, rat - 1000 mg/kg bw/day. DIPROPYLENE GLYCOL DIBENZOATE: A 13-week dietary study in rats observed decreased body weights, and liver, spleen and caecum effects at a dose of 2500 mg/kg/day which showed completed recovery within 4 weeks after exposure. NOAEL (No-Observed-Adverse-Effect-Level), oral, 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.

SECTION 12: Ecological information

12.1. Toxicity:

No ecological testing has been conducted on this product.

Chemical Name Dipropylene glycol dibenzoate	Fish 96 hour LC50 3.7 mg/L	Fish 96 hour LC50 >3 mg/L	Fish Chronic NOEC N/E
Chemical Name Dipropylene glycol dibenzoate	Invertebrates 48 hour EC50 EL50=19.3 mg/L	Invertebrates 24 hour EC50 N/E	Invertebrates Chronic NOEC N/E
Chemical Name Dipropylene glycol dibenzoate	Algae 96 hour EC50 EL50=3.6 mg/L	Algae 72 hour EC50 EL50=4.9 mg/L	Algae Chronic NOEC NOELR: 96 hours=0.46 mg/L; 72 hours=1 mg/L

12.2. Persistence and degradability:

Expected to readily biodegrade, based on similar material(s).

Chemical Name Dipropylene glycol dibenzoate	Biodegradation Readily biodegradable (OECD 301B)
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12.3. Bioaccumulative potential:

Not expected to bioaccumulate.

Chemical Name Dipropylene glycol dibenzoate	Bioconcentration Factor (BCF) <200 L/kg	Log Kow 3.9 (20°C)
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12.4. Mobility in soil:

No specific information available.

Chemical Name Dipropylene glycol dibenzoate	Mobility in soil (Koc/Kow) 3981 @ 20°C
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12.5. Results of PBT and vPvB assessment:

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

12.6. Other adverse effects:

No additional information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods:

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

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

SECTION 14: Transport information

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

14.1. UN number: N/A

14.2. UN proper shipping name:

Not regulated - See Bill of Lading for Details

14.3. Transport hazard class(es):

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

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

14.4. Packing group: N/A

14.5. Environmental hazards:

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

14.6. Special precautions for user:

Not Applicable

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

Not Applicable

SECTION 15: Regulatory information

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

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

EU Authorizations and/or restrictions on use: Not Applicable

Other EU information: No Additional Information

National regulations: No Additional Information

Chemical inventories:

<u>Regulation</u>	<u>Status</u>
Australian Inventory of Chemical Substances (AICS):	Y
Canadian Domestic Substances List (DSL):	N
Canadian Non-Domestic Substances List (NDSL):	Y
China Inventory of Existing Chemical Substances (IECSC):	Y
European Inventory of Existing Chemical Substances (EINECS):	Y
European List of Notified Chemical Substances (ELINCS):	N
Japan Existing and New Chemical Substances (ENCS):	N
Japan Industrial Safety and Health Law (ISHL):	N
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):	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; 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

15.2. Chemical safety assessment:

DIPROPYLENE GLYCOL DIBENZOATE: 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):

H412 Harmful to aquatic life with long lasting effects.

Reason for revision: Changes in Section(s): 1

Evaluation method for classification of mixtures: Calculation method, Read-across

Legend:

* : Trademark owned by Emerald Performance Materials, LLC.
 ACGIH: American Conference of Governmental Industrial Hygienists
 EU OELV: European Union Occupational Exposure Limit Value
 EU IOELV: European Union Indicative Occupational Exposure Limit Value
 N/A: Not Applicable

SDS Name: Kalama* K-FLEX* 975P

N/E: None Established

STEL: Short Term Exposure Limit

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

Users Responsibility/Disclaimer of Liability:

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

Safety Data Sheet Preparer:

Product Compliance Department

Emerald Performance Materials, LLC

2020 Front Street, Suite 100

Cuyahoga Falls, Ohio 44221

United States

Annex

Exposure Scenarios

Substance information:

Name of substance: Dipropylene glycol dibenzoate.

EC# 248-258-5 / CAS# 27138-31-4

REACH Registration number: 01-2119529241-49-0002

List of exposure scenarios:

ES1: Manufacture and use as process/solvent carrier.

ES2: Formulation.

ES3: Industrial use of adhesives and sealants.

ES4: Professional and consumer use of adhesives and sealants.

ES5: Industrial use of coatings and inks.

ES6: Professional use of coatings and inks.

ES7: Consumer use of coatings and inks.

ES8: Industrial use of lubricant additives.

ES9: Professional use of lubricant additives.

ES10: Industrial use as a plasticizer.

ES11: Professional and consumer use as a plasticizer.

ES12: Professional and consumer use as a carrier for agrochemicals.

ES13: Professional laboratory use.

ES14: Consumer use of cosmetics and personal care products.

ES15: Distribution and storage.

General remarks:

Dipropylene glycol dibenzoate (DPGDB) is mainly used as a chemical intermediate for industrial use. The most likely route of human exposure (workers) to DPGDB is through inhalation or dermal contact. Worker exposure can occur in industrial facilities where the substance is used as chemical intermediate. Since this type of activities is mainly undertaken in closed systems, exposure in general is fairly low. Dipropylene glycol dibenzoate is a readily biodegradable, non-hydrophobic liquid.

Exposure scenario (1): Manufacture and use as process/solvent carrier

1. Exposure scenario (1)

Short title of the exposure scenario:

Manufacture and use as process/solvent carrier

List of use descriptors:

Sector of use category (SU): SU3, SU8, SU9, SU10

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC14, PROC15

Environmental release category (ERC): ERC1 (ESVOC SpERC 1.1.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Use in closed process, no likelihood of exposure. Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC6 Calendering operations. Processing of product matrix. Calendering at elevated temperature on a large exposed surface.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

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

PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation. Processing of preparations and/or substances (liquid and solid) into preparations or articles. Substances in the chemical matrix may be exposed to elevated mechanical and/or thermal energy conditions. Exposure is predominantly related to volatiles and/or generated fumes, dust may be formed as well.

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:

ERC1 Manufacture of substances. Manufacture of organic and inorganic substances in chemical, petrochemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.

Further explanations:

Manufacture of the substance or use as an intermediate or process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 23167 kg/day. Maximum annual use at a site: 6950 tons/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 300 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m ³ /day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.00005 (ESVOC SpERC 1.1.v1). Release fraction to wastewater from process: 0.00003 (ESVOC SpERC 1.1.v1). Release fraction to soil from process: 0.0001 (ESVOC SpERC 1.1.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m ³ /day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

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

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

Information for contributing scenario (2): ERC1 (ESVOC SpERC 1.1.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.00364 mg/L	0.983	
Freshwater sediment	0.318 mg/kg ww	0.983	
Marine water	0.000369 mg/L	0.996	
Marine water sediment	0.0322 mg/kg ww	0.996	
Soil	0.237 mg/kg ww	0.237	
STP	0.0346 mg/L	0.00346	

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:**

Continuous use/release. Maximum daily use at a site: 23167 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(M_{\text{spERC}} * (1 - E_{\text{er-spERC}} * F_{\text{release-spERC}}) / DF_{\text{spERC}}) / DF_{\text{spERC}} \geq (M_{\text{site}} * (1 - E_{\text{er-site}} * F_{\text{release-site}}) / DF_{\text{site}})$$

- M_{spERC} = substance use rate in spERC
- E_{er-spERC} = efficacy of risk management measure in spERC
- F_{release-spERC} = initial release fraction in spERC
- DF_{spERC} = dilution factor of STP (sewage treatment plant) effluent in river
- M_{site} = substance use rate at site
- E_{er-site} = efficacy of risk management measure at site
- DF_{site} = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (2): Formulation**1. Exposure scenario (2)****Short title of the exposure scenario:**

Formulation

List of use descriptors:

Sector of use category (SU): SU10

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC14, PROC15

Environmental release category (ERC): ERC2, ERC3 (ESVOC SpERC 2.2.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Use in closed process, no likelihood of exposure. Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional expose will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or arti-cles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC6 Calendering operations. Processing of product matrix. Calendering at elevated temperature an large exposed surface.

SDS Name: Kalama* K-FLEX* 975P

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

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

PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation. Processing of preparations and/or substances (liquid and solid) into preparations or articles. Substances in the chemical matrix may be exposed to elevated mechanical and/or thermal energy conditions. Exposure is predominantly related to volatiles and/or generated fumes, dust may be formed as well.

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 of preparations. Mixing and blending of substances into (chemical) preparations in all types of formulating industries, such as paints and do-it-yourself products, pigment paste, fuels, household products (cleaning products), lubricants, etc.

ERC3 Formulation in materials. Mixing or blending of substances which will be physically or chemically bound into or onto a matrix (material) such as plastics additives in master batches or plastic compounds. For instance a plasticizers or stabilizers in PVC master-batches or products, crystal growth regulator in photographic films, etc.

Further explanations:

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing and maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 34767 kg/day. Maximum annual use at a site: 10430 tonnes/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 300 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.0025 (ESVOC SpERC 2.2.v1). Release fraction to wastewater from process: 0.00002 (ESVOC SpERC 2.2.v1). Release fraction to soil from process: 0.0001 (ESVOC SpERC 2.2.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC2, ERC3 (ESVOC SpERC 2.2.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.00364 mg/L	0.983	
Freshwater sediment	0.318 mg/kg ww	0.983	
Marine water	0.000369 mg/L	0.996	
Marine water sediment	0.0322 mg/kg ww	0.996	
Soil	0.294 mg/kg ww	0.294	
STP	0.0346 mg/L	0.00346	

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:**

Continuous use/release. Maximum daily use at a site: 34767 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(M_{\text{spERC}} * (1 - E_{\text{er-spERC}} * F_{\text{release-spERC}}) / DF_{\text{spERC}}) / DF_{\text{spERC}} \geq (M_{\text{site}} * (1 - E_{\text{er-site}} * F_{\text{release-site}}) / DF_{\text{site}})$$

- M_{spERC} = substance use rate in spERC
- E_{er-spERC} = efficacy of risk management measure in spERC
- F_{release-spERC} = initial release fraction in spERC
- DF_{spERC} = dilution factor of STP (sewage treatment plant) effluent in river
- M_{site} = substance use rate at site
- E_{er-site} = efficacy of risk management measure at site
- DF_{site} = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (3): Industrial use of adhesives and sealants**1. Exposure scenario (3)****Short title of the exposure scenario:**

Industrial use of adhesives and sealants

List of use descriptors:

Sector of use category (SU): SU3

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8b, PROC9, PROC10, PROC13, PROC14

Environmental release category (ERC): ERC5 (FEICA SpERC 5.2a.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Use in closed process, no likelihood of exposure. Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC7 Industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls; in case of coating, overspray may lead to waste water and waste.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC9 Transfer of substance or preparation 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. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

SDS Name: Kalama* K-FLEX* 975P

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dying, plating). Substance is applied to a surface by low energy tech-niques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation. Processing of preparations and/or substances (liquid and solid) into preparations or articles. Substances in the chemical matrix may be exposed to elevated mechanical and/or thermal energy conditions. Exposure is predomi-nantly related to volatiles and/or generated fumes, dust may be formed as well.

Name of contributing environmental scenario and corresponding ERCs:

ERC5 Industrial use resulting in inclusion into or onto a matrix

Further explanations:

Covers the industrial use in adhesives (sealants, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip) and equipment cleaning and maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 51295 kg/day. Maximum annual use at a site: 11285 tons/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 220 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.2 (FEICA SpERC 5.2a.v1). Release fraction to wastewater from process: 0 (FEICA SpERC 5.2a.v1). Release fraction to soil from process: 0 (FEICA SpERC 5.2a.v1).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Treat air emission to provide a typical removal efficiency of 80%.
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC5 (FEICA SpERC 5.2a.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000202 mg/L	0.0546	

Compartment	PEC	RCR	Notes
Freshwater sediment	0.0176 mg/kg ww	0.0546	
Marine water	0.000025 mg/L	0.0676	
Marine water sediment	0.00218 mg/kg ww	0.0676	
Soil	0.998 mg/kg ww	0.998	
STP	0 mg/L	0	

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: Continuous use/release. Maximum daily use at a site: 51295 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). Treat air emission to provide a typical removal efficiency of 80%. The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(M_{\text{spERC}} * (1 - E_{\text{er-sperc}} * F_{\text{release-sperc}}) / DF_{\text{spERC}}) / DF_{\text{spERC}} \geq (M_{\text{site}} * (1 - E_{\text{er-site}}) * F_{\text{release-site}}) / DF_{\text{site}}$$

- M_{spERC} = substance use rate in spERC
- E_{er-sperc} = efficacy of risk management measure in spERC
- F_{release-sperc} = initial release fraction in spERC
- DF_{spERC} = dilution factor of STP (sewage treatment plant) effluent in river
- M_{site} = substance use rate at site
- E_{er-site} = efficacy of risk management measure at site
- DF_{site} = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (4): Professional and consumer use of adhesives and sealants

1. Exposure scenario (4)

Short title of the exposure scenario:

Professional and consumer use of adhesives and sealants

List of use descriptors:

Sector of use category (SU): SU21, SU22

Product category (PC): PC1

Process category (PROC): PROC2, PROC3, PROC5, PROC8a, PROC9, PROC10, PROC11, PROC13

Environmental release category (ERC): ERC8c, ERC8f, ERC10a, ERC11a (FEICA SpERC 8c.1b.v1)

Article category (AC): AC8

List of names of contributing worker scenarios and corresponding PROCs:

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC9 Transfer of substance or preparation 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. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

PROC11 Non industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

Name of contributing environmental scenario and corresponding ERCs:

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and

coatings or adhesives, dyeing of textile fabrics.

ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.

ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life in outdoor use, such as metal, wooden and plastic construction and building materials (gutters, drains, frames, etc.)

ERC11a Wide dispersive indoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life from indoor use. For example, flooring, furniture, toys, construction materials, curtains, footwear, leather products, paper and cardboard products (magazines, books, news paper and packaging paper), electronic equipment (casing).

Further explanations:

Covers the professional and private use in adhesives (sealants, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip) and equipment cleaning and maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Amounts used in the EU: 3050 tonnes/year. Fraction of EU tonnage used in region: 0.1. Fraction of regional tonnage used locally: 0.002.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0 (FEICA SpERC 8c.1b.v1). Release fraction to wastewater from process: 0.009 (FEICA SpERC 8c.1b.v1). Release fraction to soil from process: 0 (FEICA SpERC 8c.1b.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8c, ERC8f, ERC10a, ERC11a (FEICA SpERC 8c.1b.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000276 mg/L	0.0747	
Freshwater sediment	0.0241 mg/kg ww	0.0747	
Marine water	0.0000324 mg/L	0.0877	
Marine water sediment	0.00283 mg/kg ww	0.0877	

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Soil	0.0117 mg/kg ww	0.0117	
STP	0.000748 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (5): Industrial use of coatings and inks

1. Exposure scenario (5)

Short title of the exposure scenario:

Industrial use of coatings and inks

List of use descriptors:

Sector of use category (SU): SU3

Process category (PROC): PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13

Environmental release category (ERC): ERC5 (ESVOC SpERC 4.3a.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Use in closed process, no likelihood of exposure. Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC7 Industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls; in case of coating, overspray may lead to waste water and waste.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC10 Roller application or brushing. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

Name of contributing environmental scenario and corresponding ERCs:

ERC5 Industrial use resulting in inclusion into or onto a matrix

Further explanations:

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning and maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 9883 kg/day. Maximum annual use at a site: 2965 tonnes/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 300 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.98 (ESVOC SpERC 4.3a.v1). Release fraction to wastewater from process: 0.00007 (ESVOC SpERC 4.3a.v1). Release fraction to soil from process: 0 (ESVOC SpERC 4.3a.v1).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Treat air emission to provide a typical removal efficiency of 90%.
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC5 (ESVOC SpERC 4.3a.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.00362 mg/L	0.979	
Freshwater sediment	0.316 mg/kg ww	0.979	
Marine water	0.000367 mg/L	0.992	
Marine water sediment	0.0321 mg/kg ww	0.992	
Soil	0.874 mg/kg ww	0.874	
STP	0.0344 mg/L	0.00344	

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: Continuous use/release. Maximum daily use at a site: 9883 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). Treat air emission to provide a typical removal efficiency of 90%. The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scaling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(M_{\text{spERC}} * (1 - E_{\text{ER-spERC}} * F_{\text{release-spERC}}) / DF_{\text{spERC}}) / DF_{\text{spERC}} \geq (M_{\text{site}} * (1 - E_{\text{ER-site}}) * F_{\text{release-site}}) / DF_{\text{site}}$$

- M_{spERC} = substance use rate in spERC
- $E_{\text{ER-spERC}}$ = efficacy of risk management measure in spERC
- $F_{\text{release-spERC}}$ = initial release fraction in spERC
- DF_{spERC} = dilution factor of STP (sewage treatment plant) effluent in river
- M_{site} = substance use rate at site
- $E_{\text{ER-site}}$ = efficacy of risk management measure at site
- DF_{site} = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (6): Professional use of coatings and inks

1. Exposure scenario (6)

Short title of the exposure scenario:

Professional use of coatings and inks

List of use descriptors:

Sector of use category (SU): SU22

Process category (PROC): PROC2, PROC3, PROC4, PROC5, PROC8a, PROC10, PROC11, PROC13, PROC19

Environmental release category (ERC): ERC8c, ERC8f (ESVOC SpERC 8.3b.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC10 Roller application or brushing. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

PROC11 Non industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC19 Hand-mixing with intimate contact and only PPE available. Addresses occupations where intimate and intentional contact with substances occurs without any specific exposure controls other than PPE.

Name of contributing environmental scenario and corresponding ERCs:

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.

ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.

Further explanations:

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and equipment cleaning and maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment,

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

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Amounts used in the EU: 425 tonnes/year. Fraction of EU tonnage used in region: 0.1. Fraction of regional tonnage used locally: 0.0005.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.98 (ESVOC SpERC 8.3b.v1). Release fraction to wastewater from process: 0.01 (ESVOC SpERC 8.3b.v1). Release fraction to soil from process: 0.01 (ESVOC SpERC 8.3b.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

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

Information for contributing scenario (2): ERC8c, ERC8f (ESVOC SpERC 8.3b.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000205 mg/L	0.0554	
Freshwater sediment	0.0179 mg/kg ww	0.0554	
Marine water	0.0000253 mg/L	0.0684	
Marine water sediment	0.00221 mg/kg ww	0.0684	
Soil	0.00688 mg/kg ww	0.00688	
STP	0.0000289 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (7): Consumer use of coatings and inks**1. Exposure scenario (7)****Short title of the exposure scenario:**

Consumer use of coatings and inks

List of use descriptors:

Sector of use category (SU): SU21

SDS Name: Kalama* K-FLEX* 975P

Product category (PC): PC9a, PC18

Environmental release category (ERC): ERC8c, ERC8f, ERC10a, ERC11a (ESVOC SpERC 8.3c.v1)

Article category (AC): AC8

Name of contributing environmental scenario and corresponding ERCs:

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.

ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.

ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life in outdoor use, such as metal, wooden and plastic construction and building materials (gutters, drains, frames, etc.)

ERC11a Wide dispersive indoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life from indoor use. For example, flooring, furniture, toys, construction materials, curtains, footwear, leather products, paper and cardboard products (magazines, books, news paper and packaging paper), electronic equipment (casing).

Further explanations:

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Amounts used in the EU: 425 tonnes/year.
Fraction of EU tonnage used in region: 0.1.
Fraction of regional tonnage used locally: 0.0005.

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

Environmental factors not influenced by risk management: Flow rate of receiving surface water: >=18,000 m3/day (default).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure: Industry category: 15/0: Others.
Use category: 55: Others.
Release fraction to air from process: 0.985 (ESVOC SpERC 8.3c.v1).
Release fraction to wastewater from process: 0.01 (ESVOC SpERC 8.3c.v1).
Release fraction to soil from process: 0.005 (ESVOC SpERC 8.3c.v1).

Conditions and measures related to municipal sewage treatment plant: Municipal Sewage Treatment Plant (STP): Yes (freshwater).
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

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

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8c, ERC8f, ERC10a, ERC11a (ESVOC SpERC 8.3c.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000205 mg/L	0.0554	
Freshwater sediment	0.0179 mg/kg ww	0.0554	
Marine water	0.0000253 mg/L	0.0684	
Marine water sediment	0.00221 mg/kg ww	0.0684	
Soil	0.00688 mg/kg ww	0.00688	
STP	0.0000289 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (8): Industrial use of lubricant additives

1. Exposure scenario (8)

Short title of the exposure scenario:

Industrial use of lubricant additives

List of use descriptors:

Sector of use category (SU): SU3, SU17

Process category (PROC): PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC17, PROC20

Environmental release category (ERC): ERC4 (ESVOC SpERC 4.6a.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC7 Industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls; in case of coating, overspray may lead to waste water and waste.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC9 Transfer of substance or preparation 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. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC17 Lubrication at high energy conditions and in partly open process. Lubrication at high energy conditions (temperature, friction) between moving parts and substance; significant part of process is open to workers. The metal working fluid may form aerosols or fumes due to rapidly moving metal parts.

PROC20 Heat and pressure transfer fluids in dispersive, professional use but closed systems. Motor and engine oils, brake fluids. Also in these applications, the lubricant may be exposed to high energy conditions and chemical reactions may take place during use. Exhausted fluids need to be disposed of as waste. Repair and maintenance may lead to skin contact.

Name of contributing environmental scenario and corresponding ERCs:

ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. Industrial use of processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting.

Further explanations:

Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

General:

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 231500 kg/day. Maximum annual use at a site: 4630 tonnes/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 20 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.00003 (ESVOC SpERC 4.6a.v1). Release fraction to wastewater from process: 0.000003 (ESVOC SpERC 4.6a.v1). Release fraction to soil from process: 0.001 (ESVOC SpERC 4.6a.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

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

Information for contributing scenario (2): ERC4 (ESVOC SpERC 4.6a.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.00364 mg/L	0.983	
Freshwater sediment	0.318 mg/kg ww	0.983	
Marine water	0.000368 mg/L	0.996	
Marine water sediment	0.0322 mg/kg ww	0.996	
Soil	0.238 mg/kg ww	0.238	
STP	0.0346 mg/L	0.00346	

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: Continuous use/release. Maximum daily use at a site: 231500 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(Msperc * (1 - Eer-sperc * Frelease-sperc)/DFsperc)/DFsperc >= (Msite * (1 - Eer-site) * Frelease-site)/DFsite$$

- Msperc = substance use rate in spERC
- Eer-sperc = efficacy of risk management measure in spERC
- Frelease-sperc = initial release fraction in spERC
- DF-sperc = dilution factor of STP (sewage treatment plant) effluent in river
- Msite = substance use rate at site
- Eer-site = efficacy of risk management measure at site
- DFsite = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (9): Professional use of lubricant additives

1. Exposure scenario (9)

Short title of the exposure scenario:

Professional use of lubricant additives

List of use descriptors:

Sector of use category (SU): SU22

Product category (PC): PC24

Process category (PROC): PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC20

Environmental release category (ERC): ERC8a, ERC8d, ERC9b (ESVOC SpERC 9.6b.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC9 Transfer of substance or preparation 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. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

PROC11 Non industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dying, plating,). Substance is applied to a surface by low energy tech-niques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC17 Lubrication at high energy conditions and in partly open process. Lubrication at high energy conditions (temperature, fric-tion) between moving parts and substance; significant part of process is open to workers. The metal working fluid may form aerosols or fumes due to rapidly moving metal parts.

PROC20 Heat and pressure transfer fluids in dispersive, professional use but closed systems. Motor and engine oils, brake fluids. Also in these applications, the lubricant may be exposed to high energy conditions and chemical reactions may take place during use. Exhausted fluids need to be dis-posed of as waste. Repair and maintenance may lead to skin contact.

Name of contributing environmental scenario and corresponding ERCs:

ERC8a Wide dispersive indoor use of processing aids in open systems. Indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment/sewage system, for example, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.

ERC8d Wide dispersive outdoor use of processing aids in open systems. Outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment, for example, automotive and bicycle care products (polishes, lubricants, de-icers, detergents), solvents in paints and adhesives.

ERC9b Wide dispersive outdoor use of substances in closed systems. Outdoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of hydraulic liquids in automotive suspension, lubricants in motor oil and

break fluids in automotive brake systems.

Further explanations:

Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

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

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Amounts used in the EU: 430 tonnes/year.
Fraction of EU tonnage used in region: 0.1.
Fraction of regional tonnage used locally: 0.0005.

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).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure: Industry category: 15/0: Others.
Use category: 55: Others.
Release fraction to air from process: 0.01 (ESVOC SpERC 9.6b.v1).
Release fraction to wastewater from process: 0.01 (ESVOC SpERC 9.6b.v1).
Release fraction to soil from process: 0.01 (ESVOC SpERC 9.6b.v1).

Conditions and measures related to municipal sewage treatment plant: Municipal Sewage Treatment Plant (STP): Yes (freshwater).
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

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

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

Information for contributing scenario (2): ERC8a, ERC8d, ERC9b (ESVOC SpERC 9.6b.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000205 mg/L	0.0554	
Freshwater sediment	0.0179 mg/kg ww	0.0554	
Marine water	0.0000253 mg/L	0.0684	
Marine water sediment	0.00221 mg/kg ww	0.0684	
Soil	0.00688 mg/kg ww	0.00688	
STP	0.0000295 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (10): Industrial use as a plasticizer**1. Exposure scenario (10)**

Short title of the exposure scenario:

Industrial use as a plasticizer

List of use descriptors:

Sector of use category (SU): SU3

Process category (PROC): PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC12, PROC13, PROC14

Environmental release category (ERC): ERC5 (ESVOC SpERC 4.21.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC6 Calendering operations. Processing of product matrix. Calendering at elevated temperature on a large exposed surface.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

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

PROC12 Use of blowing agents in manufacture of foam.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation. Processing of preparations and/or substances (liquid and solid) into preparations or articles. Substances in the chemical matrix may be exposed to elevated mechanical and/or thermal energy conditions. Exposure is predominantly related to volatiles and/or generated fumes, dust may be formed as well.

Name of contributing environmental scenario and corresponding ERCs:

ERC5 Industrial use resulting in inclusion into or onto a matrix

Further explanations:

Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing, and forming activities, material re-works, storage and associated maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

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

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Maximum daily use at a site: 14917 kg/day.
Maximum annual use at a site: 4475 tonnes/year.
Fraction of EU tonnage used in region: 1.
Fraction of regional tonnage used locally: 1.

Frequency and duration of use: Emission days: 300 days/year.
Continuous use/release.

Environmental factors not influenced by risk management: Flow rate of receiving surface water: ≥ 18000 m³/day (default).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure:

Industry category: 15/0: Others.
 Use category: 55: Others.
 Release fraction to air from process: 0.002 (ESVOC SRC 4.21.v1).
 Release fraction to wastewater from process: 0.00003 (ESVOC SpERC 4.21.v1).
 Release fraction to soil from process: 0.0001 (ESVOC SpERC 4.21.v1).

Conditions and measures related to municipal sewage treatment plant:

Municipal Sewage Treatment Plant (STP): Yes (freshwater).
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
 Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

Conditions and measures related to external recovery of waste:

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

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

Spills are cleaned immediately.
 All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC5 (ESVOC SpERC 4.21.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000202 mg/L	0.0546	
Freshwater sediment	0.0176 mg/kg ww	0.0546	
Marine water	0.000025 mg/L	0.0676	
Marine water sediment	0.00218 mg/kg ww	0.0676	
Soil	0.988 mg/kg ww	0.988	
STP	0 mg/L	0	

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:

Continuous use/release. Maximum daily use at a site: 14917 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(M_{\text{spERC}} * (1 - E_{\text{er-sperc}} * F_{\text{release-sperc}}) / DF_{\text{spERC}}) / DF_{\text{spERC}} \geq (M_{\text{site}} * (1 - E_{\text{er-site}}) * F_{\text{release-site}}) / DF_{\text{site}}$$

- M_{spERC} = substance use rate in spERC
- E_{er-sperc} = efficacy of risk management measure in spERC
- F_{release-sperc} = initial release fraction in spERC
- DF_{spERC} = dilution factor of STP (sewage treatment plant) effluent in river
- M_{site} = substance use rate at site
- E_{er-site} = efficacy of risk management measure at site
- DF_{site} = dilution factor of site STP (sewage treatment plant) effluent in river

Exposure scenario (11): Professional and consumer use as a plasticizer

1. Exposure scenario (11)

Short title of the exposure scenario:

Professional and consumer use as a plasticizer

List of use descriptors:

Sector of use category (SU): SU21, SU22
 Product category (PC): PC32
 Process category (PROC): PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC20
 Environmental release category (ERC): ERC8c, ERC8f, ERC10a, ERC11a (ESVOC SpERC 8.21b.v1)
 Article category (AC): AC5, AC10, AC13

List of names of contributing worker scenarios and corresponding PROCs:

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC9 Transfer of substance or preparation 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. Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.

PROC11 Non industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating,). Substance is applied to a surface by low energy tech-niques such as dipping the article into a bath or pouring a preparation onto a surface.

PROC17 Lubrication at high energy conditions and in partly open process. Lubrication at high energy conditions (temperature, friction) between moving parts and substance; significant part of process is open to workers. The metal working fluid may form aerosols or fumes due to rapidly moving metal parts.

PROC20 Heat and pressure transfer fluids in dispersive, professional use but closed systems. Motor and engine oils, brake fluids. Also in these applications, the lubricant may be exposed to high energy conditions and chemical reactions may take place during use. Exhausted fluids need to be dis-posed of as waste. Repair and maintenance may lead to skin contact.

Name of contributing environmental scenario and corresponding ERCs:

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.

ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.

ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life in outdoor use, such as metal, wooden and plastic construction and building materials (gutters, drains, frames, etc.)

ERC11a Wide dispersive indoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life from indoor use. For example, flooring, furniture, toys, construction materials, curtains, footwear, leather products, paper and cardboard products (magazines, books, news paper and packaging paper), electronic equipment (casing).

Further explanations:

Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Amounts used in the EU: 1210 tonnes/year.
Fraction of EU tonnage used in region: 0.1.
Fraction of regional tonnage used locally: 0.0005.

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).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure:

Industry category: 15/0: Others.
 Use category: 55: Others.
 Release fraction to air from process: 0.98 (ESVOC SpERC 8.21b.v1).
 Release fraction to wastewater from process: 0.01 (ESVOC SpERC 8.21b.v1).
 Release fraction to soil from process: 0.01 (ESVOC SpERC 8.21b.v1).

Conditions and measures related to municipal sewage treatment plant:

Municipal Sewage Treatment Plant (STP): Yes (freshwater).
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
 Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

Conditions and measures related to external recovery of waste:

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

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

Spills are cleaned immediately.
 All risk management measures utilised must also comply with all relevant local regulations.

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

Information for contributing scenario (2): ERC8c, ERC8f, ERC10a, ERC11a (ESVOC SpERC 8.21b.v1)

Assessment method: EUSES.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0.00021 mg/L	0.0568	
Freshwater sediment	0.0184 mg/kg ww	0.0568	
Marine water	0.0000258 mg/L	0.0698	
Marine water sediment	0.00226 mg/kg ww	0.0698	
Soil	0.00723 mg/kg ww	0.00723	
STP	0.0000822 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (12): Professional and consumer use as a carrier for agrochemicals**1. Exposure scenario (12)****Short title of the exposure scenario:**

Professional and consumer use as a carrier for agrochemicals

List of use descriptors:

Sector of use category (SU): SU21, SU22

Product category (PC): PC8, PC27

Process category (PROC): PROC4, PROC7, PROC8a, PROC8b, PROC11, PROC13

Environmental release category (ERC): ERC8d (ECPA SpERC 8d.2.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC7 Industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls; in case of coating, overspray may lead to waste water and waste.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC11 Non industrial spraying. Air dispersive techniques. Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting. Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls.

PROC13 Treatment of articles by dipping and pouring. Immersion operations. Treatment of articles by dipping, pouring, immersing, soaking,

washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dying, plating). Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface.

Name of contributing environmental scenario and corresponding ERCs:

ERC8d Wide dispersive outdoor use of processing aids in open systems. Outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment, for example, automotive and bicycle care products (polishes, lubricants, de-icers, detergents), solvents in paints and adhesives.

Further explanations:

Covers the outdoor use of substances as co-formulants in plant protection products by consumers and professional users.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Amounts used in the EU: 550 tonnes/year. Fraction of EU tonnage used in region: 0.1. Fraction of regional tonnage used locally: 0.002.
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). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.1 (EPCA SpERC 8d.2.v1). Release fraction to wastewater from process: 0 (EPCA SpERC 8d.2.v1). Release fraction to soil from process: 0.9 (EPCA SpERC 8d.2.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8d (EPCA SpERC 8d.2.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000202 mg/L	0.0546	
Freshwater sediment	0.0176 mg/kg ww	0.0546	
Marine water	0.000025 mg/L	0.0676	
Marine water sediment	0.00218 mg/kg ww	0.0676	
Soil	0.00671 mg/kg ww	0.00671	
STP	0 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (13): Professional laboratory use**1. Exposure scenario (13)****Short title of the exposure scenario:**

Professional laboratory use

List of use descriptors:

Sector of use category (SU): SU22

Process category (PROC): PROC15

Environmental release category (ERC): ERC8a, ERC9a (ESVOC SpERC 8.17.v1)

List of names of contributing worker scenarios and corresponding PROCs:

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:

ERC8a Wide dispersive indoor use of processing aids in open systems. Indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment/sewage system, for example, detergents in fabric washing, machine wash liquids and laundry cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.

ERC9a Wide dispersive indoor use of substances in closed systems. Indoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.

Further explanations:

Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

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

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Amounts used in the EU: 120 tonnes/year.
Fraction of EU tonnage used in region: 0.1.
Fraction of regional tonnage used locally: 0.0005.

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).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure: Industry category: 15/0: Others.
Use category: 55: Others.
Release fraction to air from process: 0.5 (ESVOC SpERC 8.17.v1).
Release fraction to wastewater from process: 0.5 (ESVOC SpERC 8.17.v1).
Release fraction to soil from process: 0 (ESVOC SpERC 8.17.v1).

Conditions and measures related to municipal sewage treatment plant: Municipal Sewage Treatment Plant (STP): Yes (freshwater).
Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

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

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

SDS Name: Kalama* K-FLEX* 975P

Information for contributing scenario (2): ERC8a, ERC9a (ESVOC SpERC 8.17.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000243 mg/L	0.0658	
Freshwater sediment	0.0212 mg/kg ww	0.0658	
Marine water	0.0000291 mg/L	0.0788	
Marine water sediment	0.00254 mg/kg ww	0.0788	
Soil	0.00945 mg/kg ww	0.00945	
STP	0.000415 mg/L	0	

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: Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (14): Consumer use of cosmetics and personal care products

1. Exposure scenario (14)

Short title of the exposure scenario:

Consumer use of cosmetics and personal care products

List of use descriptors:

Sector of use category (SU): SU21

Product category (PC): PC39

Environmental release category (ERC): ERC8a, ERC8c (COLIPA SpERC 8a.1.a.v1)

Name of contributing environmental scenario and corresponding ERCs:

ERC8a Wide dispersive indoor use of processing aids in open systems. Indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment/sewage system, for example, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.

Further explanations:

Covers the use of substances in cosmetic products (e.g. hair care, oral care, body care and deodorants) for end users.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

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

2.2 Control of environmental exposure

Product characteristics: Concentration of substance: Up to 100%.
Physical state: liquid.
Vapour pressure: 0.00016 Pa at 25 °C

Amounts used: Amounts used in the EU: 305 tonnes/year.
Fraction of EU tonnage used in region: 0.1.
Fraction of regional tonnage used locally: 0.00075.

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).
Local freshwater dilution factor: 10 (default).
Local marine water dilution factor: 100 (default).

Other given operational conditions affecting environmental exposure: Industry category: 15/0: Others.
Use category: 55: Others.
Release fraction to air from process: 0 (COLIPA SpERC 8a.1.a.v1).
Release fraction to wastewater from process: 1 (COLIPA SpERC 8a.1.a.v1).
Release fraction to soil from process: 0 (COLIPA SpERC 8a.1.a.v1).

Conditions and measures related to municipal sewage treatment plant:

Municipal Sewage Treatment Plant (STP): Yes (freshwater).
 Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
 Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

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

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

Conditions and measures related to external recovery of waste:

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

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

Spills are cleaned immediately.
 All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8a, ERC8c (COLIPA SpERC 8a.1.a.v1)

Assessment method: EUSES.

Exposure estimation:

Compartment	PEC	RCR	Notes
Freshwater	0.000512 mg/L	0.138	
Freshwater sediment	0.0447 mg/kg ww	0.138	
Marine water	0.000337 mg/L	0.909	
Marine water sediment	0.0294 mg/kg ww	0.909	
Soil	0.0274 mg/kg ww	0.0274	
STP	0.00312 mg/L	0.000312	

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:

Wide dispersive use. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).

Exposure scenario (15): Distribution and storage

1. Exposure scenario (15)

Short title of the exposure scenario:

Distribution and storage

List of use descriptors:

Sector of use category (SU): SU10

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

Environmental release category (ERC): ERC2 (ESVOC SpERC 1.1b.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Use in closed process, no likelihood of exposure. Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.

PROC2 Use in closed, continuous process with occasional controlled exposure. Continuous process but where the design philosophy is not specifically aimed at minimizing emissions. It is not high integrity and occasional expose will arise e.g. through maintenance, sampling and equipment breakages.

PROC3 Use in closed batch process (synthesis or formulation). Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling.

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.

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

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

Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation of preparations. Mixing and blending of substances into (chemical) preparations in all types of formulating industries, such as paints and do-it-yourself products, pigment paste, fuels, household products (cleaning products), lubricants, etc.

Further explanations:

Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its distribution.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SPERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

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

2.2 Control of environmental exposure

Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid. Vapour pressure: 0.00016 Pa at 25 °C
Amounts used:	Maximum daily use at a site: 666667 kg/day. Maximum annual use at a site: 200000 tonnes/year. Fraction of EU tonnage used in region: 1. Fraction of regional tonnage used locally: 1.
Frequency and duration of use:	Emission days: 300 days/year. Continuous use/release.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default).
Other given operational conditions affecting environmental exposure:	Industry category: 15/0: Others. Use category: 55: Others. Release fraction to air from process: 0.0001 (ESVOC SpERC 1.1b.v1). Release fraction to wastewater from process: 0.000001 (ESVOC SpERC 1.1b.v1). Release fraction to soil from process: 0.00001 (ESVOC SpERC 1.1b.v1).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES).
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC 2 (ESVOC SpERC 1.1b.v1)

Assessment method: EUSES.

Exposure estimation:

<u>Compartment</u>	<u>PEC</u>	<u>RCR</u>	<u>Notes</u>
Freshwater	0.00362 mg/L	0.978	
Freshwater sediment	0.316 mg/kg ww	0.978	
Marine water	0.000367 mg/L	0.991	
Marine water sediment	0.032 mg/kg ww	0.991	
Soil	0.281 mg/kg ww	0.281	
STP	0.0344 mg/L	0.00344	

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:

Continuous use/release. Maximum daily use at a site: 666667 kg/day. Discharge to either on-site or municipal sewage treatment plant (STP). Estimated substance removal from wastewater via domestic sewage treatment: 88.4% (EUSES). The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient. Further details on scalling and control technologies are provided in the SpERC factsheet (<http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>).

$$(Msperc * (1 - Eer-sperc * Frelease-sperc)/DFsperc)/DFsperc >= (Msite * (1 - Eer-site) * Frelease-site)/DFsite$$

- Msperc = substance use rate in spERC
 - Eer-sperc = efficacy of risk management measure in spERC
 - Frelease-sperc = initial release fraction in spERC
 - DF-sperc = dilution factor of STP (sewage treatment plant) effluent in river
 - Msite = substance use rate at site
 - Eer-site = efficacy of risk management measure at site
 - DFsite = dilution factor of site STP (sewage treatment plant) effluent in river
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