



## SAFETY DATA SHEET

### NESSOL Pentane 15

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

##### 1.1. Product identifier

Product name	NESSOL Pentane 15
Chemical name	Hydrocarbons, C5, n-alkanes, isoalkanes
Product number	ID 10563
Internal identification	135169
Synonyms; trade names	Previous product name: NESSOL LI 36.
EU REACH registration number	01-2119474207-37-0002

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

Identified uses	Manufacture of substance Distribution of substance Formulation & (re)packing of substances and mixtures Uses in coatings Use in cleaning agents Blowing agents Functional fluids Other Consumer Uses Use in laboratories
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##### 1.3. Details of the supplier of the safety data sheet

Supplier	Neste Oyj Keilaranta 21, Espoo, P.O.B. 95, FIN-00095 NESTE, FINLAND Tel. +358 10 45811 SDS@neste.com (chemical safety)
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##### 1.4. Emergency telephone number

Emergency telephone	+61 2 9186 1132, Chemwatch: International Emergency Response Phone Number
National emergency telephone number	+358 800 147 111, +358 9 471 977, Poison Information Centre

#### SECTION 2: Hazards identification

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

###### Classification (SI 2019 No. 720)

Physical hazards	Flam. Liq. 1 - H224
Health hazards	STOT SE 3 - H336 Asp. Tox. 1 - H304
Environmental hazards	Aquatic Chronic 2 - H411

##### 2.2. Label elements

###### Hazard pictograms



Signal word

Danger

## NESSOL Pentane 15

<b>Hazard statements</b>	H224 Extremely flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H336 May cause drowsiness or dizziness. H411 Toxic to aquatic life with long lasting effects.
<b>Precautionary statements</b>	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P261 Avoid breathing vapour/ spray. P273 Avoid release to the environment. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. P331 Do NOT induce vomiting. P403+P233 Store in a well-ventilated place. Keep container tightly closed.
<b>Supplemental label information</b>	EUH066 Repeated exposure may cause skin dryness or cracking.
<b>Contains</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>2.3. Other hazards</b>	
<b>Other hazards</b>	Highly volatile. Vapours may accumulate on the floor and in low-lying areas. Vapours may form explosive mixtures with air. Vapours may irritate throat/respiratory system. Risk of soil and ground water contamination.

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

<b>Hydrocarbons, C5, n-alkanes, isoalkanes</b>	<b>100 %</b>
CAS number: —	
<b>Classification</b> Flam. Liq. 1 - H224 STOT SE 3 - H336 Asp. Tox. 1 - H304 Aquatic Chronic 2 - H411	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

<b>Other information</b>	Contains, n-pentane & isopentane ≥ 97 %., Benzene (CAS 71-43-2) < 0,1 %., n-hexane (CAS 110-54-3), < 1 %.
	Identity outside the EU (CAS number and name of the substance):, 109-66-0, Pentane (isomeric mixture)., Previous EC number:, 203-692-4.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

<b>Inhalation</b>	Remove person to fresh air and keep comfortable for breathing. Get medical attention if symptoms are severe or persist.
<b>Ingestion</b>	Do not induce vomiting. Get medical attention immediately.
<b>Skin contact</b>	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing.
<b>Eye contact</b>	Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.

#### 4.2. Most important symptoms and effects, both acute and delayed

## NESSOL Pentane 15

**General information** Vapours in high concentrations are narcotic. May cause nausea, headache, dizziness and intoxication. Gas or vapour in high concentrations may irritate the respiratory system. Irritating to skin. Repeated exposure may cause skin dryness or cracking. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.

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

**Notes for the doctor** Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media** Water spray, foam, dry powder or carbon dioxide.

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

### 5.2. Special hazards arising from the substance or mixture

**Specific hazards** Extremely flammable liquid and vapour. Containers can burst violently or explode when heated, due to excessive pressure build-up. Severe explosion hazard when vapours are exposed to flames.

**Hazardous combustion products** Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO).

### 5.3. Advice for firefighters

**Protective actions during firefighting** Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Prevent fire extinguishing water from contaminating surface water or the ground water system.

**Special protective equipment for firefighters** Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Avoid inhalation of vapours and contact with skin and eyes. Wear adequate protective equipment at all operations.

**For emergency responders** Prevent unauthorized access. Vapours are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back. Use only in well-ventilated areas. Eliminate all sources of ignition. Take precautionary measures against static discharge.

### 6.2. Environmental precautions

**Environmental precautions** Avoid release to the environment. Stop leak if safe to do so. Avoid the spillage or runoff entering drains, sewers or watercourses. Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air). Risk of soil and ground water contamination.

### 6.3. Methods and material for containment and cleaning up

**Methods for cleaning up** Immediately start clean-up of the liquid and contaminated soil. Large spills should be collected mechanically (remove by pumping) for disposal. Small Spillages: Absorb spillage with sand or other inert absorbent. Do not use sawdust or other combustible material. Pay attention to the fire and health hazards caused by the product.

### 6.4. Reference to other sections

**Reference to other sections** For personal protection, see Section 8.

## NESSOL Pentane 15

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

**Usage precautions** This material is a static accumulator. Avoid heat, flames and other sources of ignition. Take precautionary measures against static discharges. Use only in well-ventilated areas. Try to avoid product volatilization during handling and transferring. Avoid inhalation of vapours and contact with skin and eyes. Use personal protective equipment and/or local ventilation when needed. Do not eat, drink or smoke when using this product. Wash hands and any other contaminated areas of the body with soap and water before leaving the work site. During tank operations follow special instructions (risk of oxygen displacement and hydrocarbons).

#### 7.2. Conditions for safe storage, including any incompatibilities

**Storage precautions** Flammable liquid storage. Store in accordance with local regulations. Keep container tightly closed, in a cool, well ventilated place. Keep away from food, drink and animal feeding stuffs. Store in a demarcated banded area to prevent release to drains and/or watercourses. Suitable container materials: Stainless steel. Carbon steel. Polystyrene

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

**Specific end use(s)** Not known.

### SECTION 8: Exposure controls/Personal protection

#### 8.1. Control parameters

**Ingredient comments** Pentane: 500 ppm (8 h), 1500 mg/m<sup>3</sup> (8 h), 630 ppm (15 min), 1900 mg/m<sup>3</sup> (15 min)  
HTP2020/FIN

**PNEC** Not available.

#### Hydrocarbons, C5, n-alkanes, isoalkanes

**DNEL** Workers - Inhalation; Long term systemic effects: 3000 mg/m<sup>3</sup>  
Workers - Dermal; Long term systemic effects: 432 mg/kg/day  
Consumer - Inhalation; Long term systemic effects: 643 mg/m<sup>3</sup>  
Consumer - Dermal; Long term systemic effects: 214 mg/kg/day  
Consumer - Oral; Long term systemic effects: 214 mg/kg/day

#### 8.2. Exposure controls

**Appropriate engineering controls** Provide adequate ventilation. Use personal protective equipment and/or local ventilation when needed. Handle in accordance with good industrial hygiene and safety practice.

**Eye/face protection** Spectacles.

**Hand protection** Wear protective gloves. It is recommended that gloves are made of the following material: Nitrile rubber. The selected gloves should have a breakthrough time of at least 4 hours. Protection class 5. Protective gloves according to standard EN 374. Change protective gloves regularly.

**Other skin and body protection** Protective clothing when needed. Wear anti-static protective clothing if there is a risk of ignition from static electricity.

**Respiratory protection** Filter device/half mask Gas filter, type AX. Filter device could be used maximum 2 hours at a time. Filter devices must not be used in conditions where the oxygen level is low (< 19 vol.-%). At high concentrations a breathing apparatus must be used (self-contained or fresh air hose breathing apparatus). Filter must be changed often enough. Respirator according to standard EN 140.

**Environmental exposure controls** Store in a demarcated banded area to prevent release to drains and/or watercourses.

## NESSOL Pentane 15

### SECTION 9: Physical and chemical properties

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

<b>Appearance</b>	Mobile liquid.
<b>Colour</b>	Clear.
<b>Odour</b>	Hydrocarbons. Mild.
<b>Odour threshold</b>	10 ppm (30 mg/m <sup>3</sup> ) (pentane)
<b>pH</b>	-
<b>Melting point</b>	< -20°C (ASTM D 5950)
<b>Initial boiling point and range</b>	~ 20...45°C
<b>Flash point</b>	< -20°C (DIN 51755)
<b>Upper/lower flammability or explosive limits</b>	Lower flammable/explosive limit: 1,4 % Upper flammable/explosive limit: 7,8 %
<b>Vapour pressure</b>	45 - 79 kPa @ 20°C (calculated) ~ 110 kPa @ 38°C
<b>Vapour density</b>	2,5 (Air = 1.0)
<b>Relative density</b>	0,62 - 0,64 @ 15/4°C (ISO 12185)
<b>Solubility(ies)</b>	The product has poor water-solubility. (~ 40 mg/l @ 20 oC)
<b>Partition coefficient</b>	log Kow: 3 - 3,5
<b>Auto-ignition temperature</b>	250°C (ASTM E 659)
<b>Decomposition Temperature</b>	-
<b>Viscosity</b>	Kinematic viscosity < 2 mm <sup>2</sup> /s @ 40°C 0,3 - 0,6 mm <sup>2</sup> /s @ 20°C (ISO 3104) Dynamic viscosity < 50 mPa s @ 20°C
<b>Explosive properties</b>	Not considered to be explosive.
<b>Oxidising properties</b>	Does not meet the criteria for classification as oxidising.
<b>9.2. Other information</b>	
<b>Other information</b>	Not known.
<b>Molecular weight</b>	~ 72

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

**Reactivity** There are no known reactivity hazards associated with this product.

#### 10.2. Chemical stability

**Stability** Stable at normal ambient temperatures and when used as recommended.

#### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions** No potentially hazardous reactions known.

#### 10.4. Conditions to avoid

## NESSOL Pentane 15

**Conditions to avoid** Keep away from heat, sparks and open flame. Take precautionary measures against static discharges.

### 10.5. Incompatible materials

**Materials to avoid** Oxidising agents. Strong acids.

### 10.6. Hazardous decomposition products

**Hazardous decomposition products** None known.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

**Toxicological effects** Based on available data the classification criteria are not met.

#### Skin corrosion/irritation

**Skin corrosion/irritation** Based on available data the classification criteria are not met. (OECD 404) Repeated exposure may cause skin dryness or cracking.

#### Serious eye damage/irritation

**Serious eye damage/irritation** Based on available data the classification criteria are not met. (OECD 405).

#### Skin sensitisation

**Skin sensitisation** Based on available data the classification criteria are not met. (OECD 406).

#### Germ cell mutagenicity

**Genotoxicity - in vitro** Based on available data the classification criteria are not met. (OECD 471, EU Method B10).

**Genotoxicity - in vivo** Based on available data the classification criteria are not met. Based on available data the classification criteria are not met. (EU Method B12) (EU Method B12)

#### Carcinogenicity

**Carcinogenicity** Based on available data the classification criteria are not met.

#### Reproductive toxicity

**Reproductive toxicity - fertility** Based on available data the classification criteria are not met. (OECD 416)

**Reproductive toxicity - development** Based on available data the classification criteria are not met. (OECD 414)

#### Specific target organ toxicity - single exposure

**STOT - single exposure** May cause nausea, headache, dizziness and intoxication. Anaesthetic in high concentrations.

#### Specific target organ toxicity - repeated exposure

**STOT - repeated exposure** Based on available data the classification criteria are not met. (OECD 407, 413)

#### Aspiration hazard

**Aspiration hazard** May be fatal if swallowed and enters airways. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.

### Toxicological information on ingredients.

#### Hydrocarbons, C5, n-alkanes, isoalkanes

##### Acute toxicity - oral

**Notes (oral LD<sub>50</sub>)** LD<sub>50</sub> > 2000 mg/kg, Oral, Rat (OECD 401, 423)

##### Acute toxicity - inhalation

**Notes (inhalation LC<sub>50</sub>)** LC<sub>50</sub> > 25,3 mg/l, Inhalation, Rat (OECD 403)

## NESSOL Pentane 15

### SECTION 12: Ecological information

#### 12.1. Toxicity

**Toxicity** Based on available data the classification criteria are not met.

#### Ecological information on ingredients.

##### Hydrocarbons, C5, n-alkanes, isoalkanes

##### Acute aquatic toxicity

<b>Acute toxicity - fish</b>	LL <sub>50</sub> , 96 hours: 30,5 mg/l, Fish (QSAR)
<b>Acute toxicity - aquatic invertebrates</b>	EL50, 48 hours: 53,2 mg/l, (QSAR) EC <sub>50</sub> , 48 hours: 2,3 mg/l, (OECD 202)
<b>Acute toxicity - aquatic plants</b>	EL50, 72 hours: 22,5 mg/l, Algae NOELR, 72 hours: 5,0 mg/l, Algae (QSAR)

##### Chronic aquatic toxicity

<b>Chronic toxicity - fish early life stage</b>	NOELR, 28 days: 6,8 mg/l, Fish (QSAR)
<b>Chronic toxicity - aquatic invertebrates</b>	NOELR, 21 days: 11,9 mg/l, (QSAR)

#### 12.2. Persistence and degradability

**Phototransformation** The product contains volatile substances which may spread in the atmosphere.  
Can be photodegraded in the atmosphere.

**Stability (hydrolysis)** No significant reaction in water.

#### Ecological information on ingredients.

##### Hydrocarbons, C5, n-alkanes, isoalkanes

<b>Biodegradation</b>	Rapidly degradable (OECD 301F)
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#### 12.3. Bioaccumulative potential

**Bioaccumulative potential** The product is not bioaccumulating.

**Partition coefficient** log Kow: 3 - 3,5

#### 12.4. Mobility in soil

**Mobility** Volatile. The product contains volatile substances which may spread in the atmosphere.  
Product does not adsorb onto organic material in soil or sediment.

**Henry's law constant** KH = 1,3 atm m<sup>3</sup>/mol (n-pentane); 1,4 atm m<sup>3</sup>/mol (isopentane).

**Surface tension** 13 - 17 mN/m @ 25°C

#### 12.5. Results of PBT and vPvB assessment

**Results of PBT and vPvB assessment** This product does not contain any substances classified as PBT or vPvB.

#### 12.6. Other adverse effects

## NESSOL Pentane 15

**Other adverse effects** Not known.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

**General information** Waste is classified as hazardous waste.

**Disposal methods** Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Product residues retained in emptied containers can be hazardous. Waste packaging should be collected for reuse or recycling.

### SECTION 14: Transport information

#### 14.1. UN number

**UN No. (ADR/RID)** 1265

#### 14.2. UN proper shipping name

**Proper shipping name (ADR/RID)** UN 1265 PENTANES, liquid

#### 14.3. Transport hazard class(es)

**ADR/RID class** 3

#### 14.4. Packing group

**ADR/RID packing group** I

#### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**  
MARINE POLLUTANT

#### 14.6. Special precautions for user

**Hazard Identification Number (ADR/RID)** 33

**Tunnel restriction code** (D/E)

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

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Bulk (MARPOL 73/78, Annex II): Pentane (all isomers). Ship type: 3 Pollution category: Cat Y  
According to MARPOL: "Non-solidifying substance"

### SECTION 15: Regulatory information

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

**National regulations** EU regulatory references for the safety data sheet:  
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).  
Commission Regulation (EU) No 2015/830 of 28 May 2015.  
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

#### 15.2. Chemical safety assessment



## NESSOL Pentane 15

A chemical safety assessment has been carried out.

### SECTION 16: Other information

<b>Key literature references and sources for data</b>	Regulations, databases, literature, own research. Chemical Safety Report Hydrocarbons, C5, n-alkanes, isoalkanes, 2010.
<b>Revision comments</b>	Updated, sections: 1.4 NOTE: Lines within the margin indicate significant changes from the previous revision.
<b>Revision date</b>	22/07/2022
<b>Supersedes date</b>	11/12/2017
<b>SDS number</b>	6026
<b>Hazard statements in full</b>	H224 Extremely flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H336 May cause drowsiness or dizziness. H411 Toxic to aquatic life with long lasting effects.

## Exposure scenario

### Manufacture of Substance - Industrial

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Manufacture of Substance - Industrial
<b>Process scope</b>	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
<b>Main sector</b>	SU3 Industrial uses
<b>Sector of use</b>	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals
<b>Environment</b>	
<b>Environmental release category</b>	ERC1 Manufacture of the substance ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<b>SPERC</b>	ESVOC SPERC 1.1.v1
<b>Worker</b>	
<b>Process category</b>	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC15 Use as laboratory reagent.

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
Regional use tonnage: 9500 tonnes/year  
Fraction of Regional tonnage used locally: 1  
Annual site tonnage: 9500 tonnes  
Maximum daily site tonnage: 95 tonnes

##### Frequency and duration of use

Continuous release.  
Emission days: 100 days/year

##### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 5.0E-02
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 3.0E-03

## Manufacture of Substance - Industrial

**Emission factor - soil** Release fraction to soil from process (initial release prior to RMM): 1.0E-04

### Environmental factors not influenced by risk management measures

**Dilution** Local freshwater dilution factor: 10  
Local marine water dilution factor: 100

### Risk management measures

**Good practice** Common practices vary across sites, thus conservative process release estimates used.

**STP type** Municipal STP.

**STP details** Estimated substance removal from wastewater via domestic sewage treatment: 96.0%  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0%  
Maximum allowable site tonnage (M<sub>safe</sub>), based on release following total wastewater treatment removal: 5.9E-05 kg/day  
Assumed domestic sewage treatment plant flow: 10 000 m<sup>3</sup>/day

### Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

**Air** Treat air emission to provide a typical removal efficiency of 90%.

**Water** Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite waste water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 75.1. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0.0%.

**Soil** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

**Waste treatment** During manufacturing no waste of the substance is generated.

### Conditions and measures related to external recovery of waste

**Recovery method** During manufacturing no waste of the substance is generated.

## 2. Conditions of use affecting exposure (Workers - Health 1)

### Risk management measures

## Manufacture of Substance - Industrial

General exposures (closed systems)  
No specific measures identified.

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General exposures (open systems)  
No specific measures identified.

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Process sampling  
No specific measures identified.

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Laboratory activities  
No specific measures identified.

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Bulk transfers  
(open systems)  
No specific measures identified.

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Bulk transfers  
(closed systems)  
No specific measures identified.

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Equipment cleaning and maintenance  
No specific measures identified.

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Storage  
No specific measures identified.

### 3. Exposure estimation (Environment 1)

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Distribution of Substance - Industrial

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Distribution of Substance - Industrial
<b>Process scope</b>	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.
<b>Main sector</b>	SU3 Industrial uses

#### Environment

<b>Environmental release category</b>	ERC1 Manufacture of the substance ERC2 Formulation into mixture ERC3 Formulation into solid matrix ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC5 Use at industrial site leading to inclusion into/onto article ERC6a Use of intermediate ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) ERC7 Use of functional fluid at industrial site
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<b>SPERC</b>	ESVOC SPERC 1.1b.v1
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#### Worker

<b>Process category</b>	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.
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#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

#### Amounts used

## Distribution of Substance - Industrial

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 4000 tonnes/year  
 Fraction of Regional tonnage used locally: 1  
 Annual site tonnage: 8.0 tonnes  
 Maximum daily site tonnage: 400 kg

### Frequency and duration of use

Continuous release.  
 Emission days: 20 days/year

### Other given operational conditions affecting environmental exposure

**Emission factor - air** Release fraction to air from process (initial release prior to RMM): 1.0E-03  
**Emission factor - water** Release fraction to wastewater from process (initial release prior to RMM): 1.0E-05  
**Emission factor - soil** Release fraction to soil from process (initial release prior to RMM): 1.0E-05

### Environmental factors not influenced by risk management measures

**Dilution** Local freshwater dilution factor: 10  
 Local marine water dilution factor: 100

### Risk management measures

**Good practice** Common practices vary across sites, thus conservative process release estimates used.  
**STP type** Municipal STP.  
**STP details** Estimated substance removal from wastewater via domestic sewage treatment: 96.0%  
 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0%  
 Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 15,000 tonne/day  
 Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

### Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

**Air** Treat air emission to provide a typical removal efficiency of 90%.  
**Water** Risk from environmental exposure is driven by fresh water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):  $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq 0.0\%$ .  
**Soil** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

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

### Conditions and measures related to external recovery of waste

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

## 2. Conditions of use affecting exposure (Workers - Health 1)

### Product characteristics

**Physical state** Liquid  
**Concentration details** Covers percentage substance in the product up to 100% (unless stated differently).

## Distribution of Substance - Industrial

### Amounts used

Not applicable.

### Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

### Other given operational conditions affecting workers exposure

#### **Setting**

Assumes a good basic standard of occupational hygiene is implemented.

#### **Temperature**

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### Risk management measures

General exposures (closed systems)

No specific measures identified.

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General exposures (open systems)

No specific measures identified.

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Process sampling

No specific measures identified.

.

Laboratory activities

No specific measures identified.

.

Bulk transfers

(closed systems)

No specific measures identified.

.

Bulk transfers

(open systems)

No specific measures identified.

.

Drum and small package filling

No specific measures identified.

.

Equipment cleaning and maintenance

No specific measures identified.

.

Storage

No specific measures identified.

### 3. Exposure estimation (Environment 1)

#### **Assessment method**

Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

## Distribution of Substance - Industrial

**Assessment method**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

**4. Guidance to check compliance with the exposure scenario (Health 1)**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



## Exposure scenario

### Formulation & (Re)packing of Substances and Mixtures - Industrial

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Formulation & (Re)packing of Substances and Mixtures - Industrial
<b>Process scope</b>	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
<b>Main sector</b>	SU3 Industrial uses
<b>Sector of use</b>	SU10 Formulation [mixing] of preparations and/or re-packaging
<b>Environment</b>	
<b>Environmental release category</b>	ERC2 Formulation into mixture
<b>SPERC</b>	ESVOC SPERC 2.2.v1
<b>Worker</b>	
<b>Process category</b>	<p>PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</p> <p>PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4 Chemical production where opportunity for exposure arises</p> <p>PROC5 Mixing or blending in batch processes</p> <p>PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities</p> <p>PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> <p>PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</p> <p>PROC14 Tableting, compression, extrusion, pelletisation, granulation</p> <p>PROC15 Use as laboratory reagent.</p>

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 10,000 tonnes/year  
 Fraction of Regional tonnage used locally: 1  
 Annual site tonnage: 1000 tonnes  
 Maximum daily site tonnage: 10 tonnes

##### Frequency and duration of use

Continuous release.  
 Emission days: 100 days/year

## Formulation & (Re)packing of Substances and Mixtures - Industrial

### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): 2.5E-02
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 2.0E-03
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 1.0E-04

### Environmental factors not influenced by risk management measures

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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### Risk management measures

<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.
<b>STP details</b>	Estimated substance removal from wastewater via domestic sewage treatment: 96.0% Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 180 tonne/day Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day

### Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

<b>Air</b>	Treat air emission to provide a typical removal efficiency of 0%.
<b>Water</b>	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite waste water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 29.4. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0.0%.
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### Conditions and measures related to external recovery of waste

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
------------------------	---

## 2. Conditions of use affecting exposure (Workers - Health 1)

### Product characteristics

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### Amounts used

Not applicable.

### Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

### Other given operational conditions affecting workers exposure

## Formulation & (Re)packing of Substances and Mixtures - Industrial

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
<b><u>Risk management measures</u></b>	<p>General exposures (closed systems) No specific measures identified.</p> <p>.</p> <p>General exposures (open systems) No specific measures identified.</p> <p>.</p> <p>Batch processes at elevated temperatures Operation is carried out at elevated temperature (&gt; 20°C above ambient temperature). No specific measures identified.</p> <p>.</p> <p>Process sampling No specific measures identified.</p> <p>.</p> <p>Laboratory activities No specific measures identified.</p> <p>.</p> <p>Bulk transfers No specific measures identified.</p> <p>.</p> <p>Mixing operations (open systems) No specific measures identified.</p> <p>.</p> <p>Manual Transfer from/pouring from containers No specific measures identified.</p> <p>.</p> <p>Drum/batch transfers No specific measures identified.</p>

### 3. Exposure estimation (Environment 1)

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

## **Formulation & (Re)packing of Substances and Mixtures - Industrial**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Uses in Coatings - Industrial

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Uses in Coatings - Industrial
<b>Process scope</b>	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, maintenance and associated laboratory activities.
<b>Main sector</b>	SU3 Industrial uses
<b>Environment</b>	
<b>Environmental release category</b>	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<b>SPERC</b>	ESVOC SPERC 4.3a.v1
<b>Worker</b>	
<b>Process category</b>	<p>PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</p> <p>PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4 Chemical production where opportunity for exposure arises</p> <p>PROC5 Mixing or blending in batch processes</p> <p>PROC7 Industrial spraying</p> <p>PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities</p> <p>PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> <p>PROC10 Roller application or brushing</p> <p>PROC13 Treatment of articles by dipping and pouring.</p> <p>PROC15 Use as laboratory reagent.</p>

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 250 tonnes/year  
 Fraction of Regional tonnage used locally: 1  
 Annual site tonnage: 250 tonnes  
 Maximum daily site tonnage: 13 tonnes

##### Frequency and duration of use

Continuous release.  
 Emission days: 20 days/year

##### Other given operational conditions affecting environmental exposure

## Uses in Coatings - Industrial

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.98
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 7.0E-03
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0
<b><u>Environmental factors not influenced by risk management measures</u></b>	
<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
<b><u>Risk management measures</u></b>	
<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.
<b>STP details</b>	Estimated substance removal from wastewater via domestic sewage treatment: 96.0% Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 21 tonne/day Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day
<b><u>Technical onsite conditions and measures to reduce or limit discharges to air, water and soil</u></b>	
<b>Air</b>	Treat air emission to provide a typical removal efficiency of 90%.
<b>Water</b>	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite waste water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 84.1. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0.0%.
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
<b><u>Conditions and measures related to external treatment of waste for disposal</u></b>	
<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
<b><u>Conditions and measures related to external recovery of waste</u></b>	
<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
<b>2. Conditions of use affecting exposure (Workers - Health 1)</b>	
<b><u>Product characteristics</u></b>	
<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).
<b><u>Amounts used</u></b>	
	Not applicable.
<b><u>Frequency and duration of use</u></b>	
	Covers daily exposures up to 8 hours (unless stated differently).
<b><u>Other given operational conditions affecting workers exposure</u></b>	
<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

## Uses in Coatings - Industrial

### Risk management measures

General exposures (closed systems)  
No specific measures identified.

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General exposures (closed systems)  
With sample collection  
Use in contained systems  
No specific measures identified.

.

Film formation - force drying (50 - 100°C), stoving (> 100°C), UV/EB radiation curing  
Continuous process  
No specific measures identified.

.

Mixing operations  
(closed systems)  
General exposures (closed systems)  
No specific measures identified.

.

Film formation - air drying  
No specific measures identified.

.

Preparation of material for application  
Mixing operations  
(open systems)  
No specific measures identified.

.

Spraying (automatic/robotic)  
Carry out in a vented booth provided with laminar airflow.

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Manual spraying  
Provide a good standard of controlled ventilation (10 to 15 air changes per hour).  
Wear a respirator conforming to EN140 with Type A filter or better.

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Material transfers  
No specific measures identified.

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Roller, spreader, flow application  
No specific measures identified.

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Dipping, immersion and pouring  
No specific measures identified.

.

Laboratory activities  
No specific measures identified.

.

Material transfers  
Drum/batch transfers  
Transfer from/pouring from containers  
No specific measures identified.

.

Production of preparations or articles by tableting, compression, extrusion, pelletisation  
No specific measures identified.

### 3. Exposure estimation (Environment 1)

## Uses in Coatings - Industrial

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



## Exposure scenario

### Uses in Coatings - Consumer

#### Identification

**Product name** Hydrocarbons, C5, n-alkanes, isoalkanes

**EU REACH registration number** 01-2119474207-37-0002

#### 1. Title of exposure scenario

**Main title** Uses in Coatings - Consumer

**Process scope** 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.

**Product category**

- PC1 Adhesives, sealants.
- PC4 Anti-freeze and de-icing products.
- PC8 Biocidal products
- PC9a Coatings and paints, thinners, paint removers.
- PC9b Fillers, putties, plasters, modelling clay.
- PC9c Finger paints.
- PC15 Non-metal-surface treatment products.
- PC18 Ink and toners.
- PC23 Leather treatment products
- PC24 Lubricants, greases and release products.
- PC31 Polishes and wax blends.
- PC34 Textile dyes and impregnating products

**Main sector** SU21 Consumer uses

#### Environment

**Environmental release category**

- ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
- ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**SPERC** ESVOC SPERC 8.3c.v1

#### Non-industrial

## Uses in Coatings - Consumer

<b>Product sub-category</b>	PC1_1 Glues, hobby use
	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
	PC1_3 Glue from spray
	PC1_4 Sealants
	PC4_1 Washing car window
	PC4_2 Pouring into radiator
	PC4_3 Lock de-icer
	PC8_1 Laundry and dish-washing products
	PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )
	PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
	PC9a_1 Water-borne latex wall paint
	PC9a_2 Solvent-rich, high-solid, water-borne paint
	PC9a_3 Aerosol spray can
	PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)
	PC9b_1 Fillers and putty
	PC9b_2 Plasters and floor equalisers
	PC9b_3 Modelling clay
	PC15_1 Water-borne latex wall paint
	PC15_2 Solvent rich, high solid, water-borne paint
	PC15_3 Aerosol spray can
	PC15_4 Removers (paint-, glue-, wall paper-, sealant remover)
	PC23_1 Polishes, wax/cream (floor, furniture, shoes)
	PC23_2 Polishes, spray (furniture, shoes)
	PC24_1 Liquids
	PC24_2 Pastes
	PC24_3 Sprays
	PC31_1 Polishes, wax/cream (floor, furniture, shoes)
	PC31_2 Polishes, spray (furniture, shoes)

### 2. Conditions of use affecting exposure (Non-industrial - Environment 1)

#### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 50 tonnes/year  
 Fraction of Regional tonnage used locally: 5.0E-04  
 Annual site tonnage: 2.5E-02 tonnes  
 Maximum daily site tonnage: 6.8E-02 kg/day

#### Frequency and duration of use

Continuous release.  
 Emission days: 365 days/year

#### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.985
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 0.01
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0.005

#### Environmental factors not influenced by risk management measures

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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#### Risk management measures

<b>STP type</b>	Municipal STP.
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## Uses in Coatings - Consumer

**STP details** Estimated substance removal from wastewater via domestic sewage treatment: 96.0%  
 Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 3.7 tonne/day  
 Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

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

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

### Conditions and measures related to external recovery of waste

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

## 2. Conditions of use affecting exposure (Non-industrial - Health 1)

### Product characteristics

**Physical state** Liquid

**Concentration details** PC1\_1 Glues, hobby use . PC1\_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) . PC1\_3 Glue from spray . PC1\_4 Sealants : Covers concentrations up to 30 % . PC4\_1 Washing car window . PC9b\_3 Modelling clay : Covers concentrations up to 1 % . PC4\_2 Pouring into radiator . PC18 Ink and toners. . PC34 Textile dyes and impregnating products : Covers concentrations up to 10 % . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC15\_3 Aerosol spray can . PC15\_4 Removers (paint-, glue-, wall paper-, sealant remover) . PC23\_1 Polishes, wax/cream (floor, furniture, shoes) . PC23\_2 Polishes, spray (furniture, shoes) . PC24\_3 Sprays . PC31\_1 Polishes, wax/cream (floor, furniture, shoes) . PC31\_2 Polishes, spray (furniture, shoes) : Covers concentrations up to 50 % . PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) : Covers concentrations up to 5 % . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) : Covers concentrations up to 15 % . PC9a\_1 Water-borne latex wall paint . PC15\_1 Water-borne latex wall paint : Covers concentrations up to 1.5 % . PC9a\_2 Solvent-rich, high-solid, water-borne paint . PC15\_2 Solvent rich, high solid, water-borne paint : Covers concentrations up to 27.5 % . PC9b\_1 Fillers and putty . PC9b\_2 Plasters and floor equalisers : Covers concentrations up to 2 % . PC9c Finger paints : Covers concentrations up to 50 % . Avoid using a product concentration greater than 5% . PC24\_1 Liquids : Covers concentrations up to 100 % . PC24\_2 Pastes : Concentration of substance in product: 20%

### Amounts used

## Uses in Coatings - Consumer

PC1\_1 Glues, hobby use

For each use event, covers use amounts up to 9 g.

.

PC1\_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

For each use event, covers use amounts up to 6390 g.

.

PC1\_3 Glue from spray

For each use event, covers use amounts up to 85.05 g.

.

PC1\_4 Sealants

For each use event, covers use amounts up to 75 g.

.

PC4\_1 Washing car window

For each use event, covers use amounts up to 0.5 g.

.

PC4\_2 Pouring into radiator

For each use event, covers use amounts up to 2000 g.

.

PC4\_3 Lock de-icer

For each use event, covers use amounts up to 4 g.

.

PC8\_1 Laundry and dish-washing products

For each use event, covers use amounts up to 15 g.

.

PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )

For each use event, covers use amounts up to 27 g.

.

PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

For each use event, covers use amounts up to 35 g.

.

PC9a\_1 Water-borne latex wall paint

For each use event, covers use amounts up to 2760 g.

.

PC9a\_2 Solvent-rich, high-solid, water-borne paint

For each use event, covers use amounts up to 744 g.

.

PC9a\_3 Aerosol spray can

For each use event, covers use amounts up to 215 g.

.

PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

For each use event, covers use amounts up to 491 g.

.

PC9b\_1 Fillers and putty

For each use event, covers use amounts up to 85 g.

.

PC9b\_2 Plasters and floor equalisers

For each use event, covers use amounts up to 13.8 kg.

.

PC15\_1 Water-borne latex wall paint

For each use event, covers use amounts up to 2760 g.

.

PC15\_2 Solvent rich, high solid, water-borne paint

For each use event, covers use amounts up to 744 g.

.

## Uses in Coatings - Consumer

PC15\_3 Aerosol spray can

For each use event, covers use amounts up to 215 g.

.

PC15\_4 Removers (paint-, glue-, wall paper-, sealant remover)

For each use event, covers use amounts up to 491 g.

.

PC18 Ink and toners.

For each use event, covers use amounts up to 40 g.

.

PC23\_1 Polishes, wax/cream (floor, furniture, shoes)

For each use event, covers use amounts up to 56 g.

.

PC23\_2 Polishes, spray (furniture, shoes)

For each use event, covers use amounts up to 56 g.

.

PC24\_1 Liquids

For each use event, covers use amounts up to 2200 g.

.

PC24\_2 Pastes

For each use event, covers use amounts up to 34 g.

.

PC24\_3 Sprays

For each use event, covers use amounts up to 73 g.

.

PC31\_1 Polishes, wax/cream (floor, furniture, shoes)

For each use event, covers use amounts up to 142 g.

.

PC31\_2 Polishes, spray (furniture, shoes)

For each use event, covers use amounts up to 35 g.

.

PC34 Textile dyes and impregnating products

For each use event, covers use amounts up to 115 g.

### Frequency and duration of use

## Uses in Coatings - Consumer

PC1\_1 Glues, hobby use

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 4.00 hours per event.

.

PC1\_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Covers use up to 1 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 6.00 hours per event.

.

PC1\_3 Glue from spray

Covers use up to 6 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 4.00 hours per event.

.

PC1\_4 Sealants

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 1.00 hour per event.

.

PC4\_1 Washing car window

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.02 hours per event.

.

PC4\_2 Pouring into radiator

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.

PC4\_3 Lock de-icer

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.25 hours per event.

.

PC8\_1 Laundry and dish-washing products

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.50 hours per event.

.

PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )

Covers use up to 128 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.33 hours per event.

.

PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Covers use up to 128 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.

PC9a\_1 Water-borne latex wall paint

Covers use up to 4 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 2.20 hours per event.

## Uses in Coatings - Consumer

.  
PC9a\_2 Solvent-rich, high-solid, water-borne paint  
Covers use up to 6 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.20 hours per event.

.  
PC9a\_3 Aerosol spray can  
Covers use up to 2 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.33 hours per event.

.  
PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover)  
Covers use up to 3 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.00 hours per event.

.  
PC9b\_1 Fillers and putty  
Covers use up to 12 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 4.00 hour per event.

.  
PC9b\_2 Plasters and floor equalisers  
Covers use up to 12 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.00 hours per event.

.  
PC9b\_3 Modelling clay  
Covers use up to 365 days/year.  
Covers use up to 1 time(s)/day.

.  
PC9c Finger paints  
Covers use up to 365 days/year.  
Covers use up to 1 time(s)/day.

.  
PC15\_1 Water-borne latex wall paint  
Covers use up to 4 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.20 hours per event.

.  
PC15\_2 Solvent rich, high solid, water-borne paint  
Covers use up to 6 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.20 hours per event.

.  
PC15\_3 Aerosol spray can  
Covers use up to 2 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.33 hours per event.

.  
PC15\_4 Removers (paint-, glue-, wall paper-, sealant remover)  
Covers use up to 3 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.00 hours per event.

.  
PC18 Ink and toners.

## Uses in Coatings - Consumer

Covers use up to 365 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 2.20 hours per event.

.  
PC23\_1 Polishes, wax/cream (floor, furniture, shoes)

Covers use up to 29 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 1.23 hours per event.

.  
PC23\_2 Polishes, spray (furniture, shoes)

Covers use up to 8 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.33 hours per event.

.  
PC24\_1 Liquids

Covers use up to 4 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.17 hours per event.

.  
PC24\_2 Pastes

Covers use up to 10 days/year.  
Covers use up to 1 time(s)/day.

.  
PC24\_3 Sprays

Covers use up to 6 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.17 hours per event.

.  
PC31\_1 Polishes, wax/cream (floor, furniture, shoes)

Covers use up to 29 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 1.23 hours per event.

.  
PC31\_2 Polishes, spray (furniture, shoes)

Covers use up to 8 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.33 hours per event.

.  
PC34 Textile dyes and impregnating products

Covers use up to 365 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 1.00 hour per event.

**Human factors not influenced by risk management**



## Uses in Coatings - Consumer

### Potentially exposed body parts

PC1\_1 Glues, hobby use . PC1\_3 Glue from spray . PC1\_4 Sealants . PC9b\_1 Fillers and putty : Covers skin contact area up to 35.73 cm<sup>2</sup>. PC1\_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) : Covers skin contact area up to 110.00 cm<sup>2</sup>. PC4\_2 Pouring into radiator . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) : Covers skin contact area up to 428.00 cm<sup>2</sup>. PC4\_3 Lock de-icer : Covers skin contact area up to 214.40 cm<sup>2</sup>. PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners ) . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC9b\_2 Plasters and floor equalisers . PC15\_4 Removers (paint-, glue-, wall paper-, sealant remover) . PC34 Textile dyes and impregnating products : Covers skin contact area up to 857.50 cm<sup>2</sup>. PC9a\_1 Water-borne latex wall paint . PC9a\_2 Solvent-rich, high-solid, water-borne paint . PC15\_1 Water-borne latex wall paint . PC15\_2 Solvent rich, high solid, water-borne paint . PC24\_3 Sprays : Covers skin contact area up to 428.75 cm<sup>2</sup>. PC9b\_3 Modelling clay . PC9c Finger paints : Covers skin contact area up to 254.40 cm<sup>2</sup>. PC18 Ink and toners. : Covers skin contact area up to 71.40 cm<sup>2</sup>. PC23\_1 Polishes, wax/cream (floor, furniture, shoes) . PC23\_2 Polishes, spray (furniture, shoes) . PC31\_1 Polishes, wax/cream (floor, furniture, shoes) . PC31\_2 Polishes, spray (furniture, shoes) : Covers skin contact area up to 430.00 cm<sup>2</sup>. PC24\_1 Liquids . PC24\_2 Pastes : Covers skin contact area up to 468.00 cm<sup>2</sup>.

PC9b\_3 Modelling clay : For each use event, assumes swallowed amount of (g): 1 g . PC9c Finger paints : For each use event, assumes swallowed amount of (g): 1.35 g .

### Other given operational conditions affecting Non-industrial exposure

#### Temperature

Assumes activities are at ambient temperature (unless stated differently).

#### Room size

PC1\_1 Glues, hobby use . PC1\_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) . PC1\_3 Glue from spray . PC1\_4 Sealants . PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners ) . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) . PC9a\_1 Water-borne latex wall paint . PC9a\_2 Solvent-rich, high-solid, water-borne paint . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC9b\_1 Fillers and putty . PC9b\_2 Plasters and floor equalisers . PC15\_1 Water-borne latex wall paint . PC15\_2 Solvent rich, high solid, water-borne paint . PC15\_4 Removers (paint-, glue-, wall paper-, sealant remover) . PC18 Ink and toners. . PC23\_1 Polishes, wax/cream (floor, furniture, shoes) . PC23\_2 Polishes, spray (furniture, shoes) . PC24\_3 Sprays . PC31\_1 Polishes, wax/cream (floor, furniture, shoes) . PC31\_2 Polishes, spray (furniture, shoes) . PC34 Textile dyes and impregnating products : Covers use in room size of 20 m<sup>3</sup>. PC4\_1 Washing car window . PC4\_2 Pouring into radiator . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC15\_3 Aerosol spray can PC24\_1 Liquids : Covers use in room size of 34 m<sup>3</sup>.

#### Ventilation rate

Covers use under typical household ventilation. Unless otherwise stated. PC4\_1 Washing car window . PC4\_2 Pouring into radiator . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC15\_3 Aerosol spray can . PC24\_1 Liquids : Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation.

### Other given operational conditions affecting Non-industrial exposure

No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation (Environment 1)

#### Assessment method

Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

## Uses in Coatings - Consumer

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate consumer exposures, unless otherwise indicated.

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Use in Cleaning Agents - Consumer

#### Identification

**Product name** Hydrocarbons, C5, n-alkanes, isoalkanes

**EU REACH registration number** 01-2119474207-37-0002

#### 1. Title of exposure scenario

**Main title** Use in Cleaning Agents - Consumer

**Process scope** Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.

**Product category**

- PC3 Air care products.
- PC4 Anti-freeze and de-icing products.
- PC8 Biocidal products
- PC9a Coatings and paints, thinners, paint removers.
- PC9b Fillers, putties, plasters, modelling clay.
- PC9c Finger paints.
- PC24 Lubricants, greases and release products.
- PC35 Washing and cleaning products
- PC38 Welding and soldering products, flux products

**Main sector** SU21 Consumer uses

#### Environment

**Environmental release category**

- ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
- ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

**SPERC** ESVOC SPERC 8.4c.v1

#### Non-industrial

## Use in Cleaning Agents - Consumer

<b>Product sub-category</b>	PC3_1 Air care, instant action (aerosol sprays)
	PC3_n Air care, instant action (aerosol sprays) - pesticidal - excipient only
	PC3_2 Air care, continuous action (solid and liquid)
	PC3_n Air care, continuous action (solid and liquid) - pesticidal - excipient only
	PC4_1 Washing car window
	PC4_2 Pouring into radiator
	PC4_3 Lock de-icer
	PC8_1 Laundry and dish-washing products
	PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )
	PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
	PC9a_1 Water-borne latex wall paint
	PC9a_2 Solvent-rich, high-solid, water-borne paint
	PC9a_3 Aerosol spray can
	PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)
	PC9b_1 Fillers and putty
	PC9b_2 Plasters and floor equalisers
	PC9b_3 Modelling clay
	PC24_1 Liquids
	PC24_2 Pastes
	PC24_3 Sprays
	PC35_1 Laundry and dish washing products
	PC35_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners)
	PC35_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

### 2. Conditions of use affecting exposure (Non-industrial - Environment 1)

#### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 360 tonnes/year  
 Fraction of Regional tonnage used locally: 5.0E-04  
 Annual site tonnage: 0.18 tonnes  
 Maximum daily site tonnage: 0.49 kg/day

#### Frequency and duration of use

Continuous release.  
 Emission days: 365 days/year

#### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.95
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 0.025
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0.025

#### Environmental factors not influenced by risk management measures

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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#### Risk management measures

<b>STP type</b>	Municipal STP.
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## Use in Cleaning Agents - Consumer

**STP details** Estimated substance removal from wastewater via domestic sewage treatment: 96.0%  
 Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 14 tonne/day  
 Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

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

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

### Conditions and measures related to external recovery of waste

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

## 2. Conditions of use affecting exposure (Non-industrial - Health 1)

### Product characteristics

**Physical state** Liquid

**Concentration details** PC3\_1 Air care, instant action (aerosol sprays) . PC3\_n Air care, instant action (aerosol sprays) - pesticidal - excipient only . PC3\_n Air care, continuous action (solid and liquid) - pesticidal - excipient only . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC24\_3 Sprays : Covers concentrations up to 50 % . PC3\_2 Air care, continuous action (solid and liquid) . PC4\_2 Pouring into radiator : Covers concentrations up to 10 % . PC4\_1 Washing car window . PC9b\_3 Modelling clay : Covers concentrations up to 1 % . PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners ) . PC35\_1 Laundry and dish washing products . PC35\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners) : Covers concentrations up to 5 % . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) . PC35\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) : Covers concentrations up to 15 % . PC9a\_1 Water-borne latex wall paint : Covers concentrations up to 1.5 % . PC9a\_2 Solvent-rich, high-solid, water-borne paint : Covers concentrations up to 27.5 % . PC9b\_1 Fillers and putty . PC9b\_2 Plasters and floor equalisers : Covers concentrations up to 2 % . PC9c Finger paints : Covers concentrations up to 50 % . Avoid using at a product concentration greater than 5% . PC24\_1 Liquids : Covers concentrations up to 100 % . PC24\_2 Pastes . PC38 Welding and soldering products, flux products : Concentration of substance in product: 20%

### Amounts used

## Use in Cleaning Agents - Consumer

PC3\_1 Air care, instant action (aerosol sprays)

For each use event, covers use amounts up to 0.1 g.

.

PC3\_n Air care, instant action (aerosol sprays) - pesticidal - excipient only

For each use event, covers use amounts up to 5 g.

.

PC3\_2 Air care, continuous action (solid and liquid)

For each use event, covers use amounts up to 0.48 g.

.

PC3\_n Air care, continuous action (solid and liquid) - pesticidal - excipient only

For each use event, covers use amounts up to 0.48 g.

.

PC4\_1 Washing car window

For each use event, covers use amounts up to 0.5 g.

.

PC4\_2 Pouring into radiator

For each use event, covers use amounts up to 2000 g.

.

PC4\_3 Lock de-icer

For each use event, covers use amounts up to 4 g.

.

PC8\_1 Laundry and dish-washing products

For each use event, covers use amounts up to 15 g.

.

PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )

For each use event, covers use amounts up to 27 g.

.

PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

For each use event, covers use amounts up to 35 g.

.

PC9a\_1 Water-borne latex wall paint

For each use event, covers use amounts up to 2760 g.

.

PC9a\_2 Solvent-rich, high-solid, water-borne paint

For each use event, covers use amounts up to 744 g.

.

PC9a\_3 Aerosol spray can

For each use event, covers use amounts up to 215 g.

.

PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

For each use event, covers use amounts up to 491 g.

.

PC9b\_1 Fillers and putty

For each use event, covers use amounts up to 85 g.

.

PC9b\_2 Plasters and floor equalisers

For each use event, covers use amounts up to 13.8 kg.

.

PC24\_1 Liquids

For each use event, covers use amounts up to 2200 g.

.

PC24\_2 Pastes

For each use event, covers use amounts up to 34 g.

.

## Use in Cleaning Agents - Consumer

### PC24\_3 Sprays

For each use event, covers use amounts up to 73 g.

.

### PC35\_1 Laundry and dish washing products

For each use event, covers use amounts up to 15 g.

.

### PC35\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners)

For each use event, covers use amounts up to 27 g.

.

### PC35\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

For each use event, covers use amounts up to 35 g.

.

### PC38 Welding and soldering products, flux products

For each use event, covers use amounts up to 12 g.

### Frequency and duration of use

## Use in Cleaning Agents - Consumer

PC3\_1 Air care, instant action (aerosol sprays)

Covers use up to 365 days/year.

Covers use up to 4 time(s)/day.

Covers exposure up to 0.25 hours per event.

.

PC3\_n Air care, instant action (aerosol sprays) - pesticidal - excipient only

Covers use up to 365 days/year.

Covers use up to 4 time(s)/day.

Covers exposure up to 0.25 hours per event.

.

PC3\_2 Air care, continuous action (solid and liquid)

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 8.00 hours per event.

.

PC3\_n Air care, continuous action (solid and liquid) - pesticidal - excipient only

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 8.00 hours per event.

.

PC4\_1 Washing car window

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.02 hours per event.

.

PC4\_2 Pouring into radiator

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.

PC4\_3 Lock de-icer

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.25 hours per event.

.

PC8\_1 Laundry and dish-washing products

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.50 hours per event.

.

PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )

Covers use up to 128 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.33 hours per event.

.

PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Covers use up to 128 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.

PC9a\_1 Water-borne latex wall paint

Covers use up to 4 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 2.20 hours per event.



## Use in Cleaning Agents - Consumer

.  
PC9a\_2 Solvent-rich, high-solid, water-borne paint

Covers use up to 6 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 2.20 hours per event.

.  
PC9a\_3 Aerosol spray can

Covers use up to 2 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.33 hours per event.

.  
PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

Covers use up to 3 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 2.00 hours per event.

.  
PC9b\_1 Fillers and putty

Covers use up to 12 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 4.00 hour per event.

.  
PC9b\_2 Plasters and floor equalisers

Covers use up to 12 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 2.00 hours per event.

.  
PC9b\_3 Modelling clay

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

.  
PC9c Finger paints

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

.  
PC24\_1 Liquids

Covers use up to 4 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.  
PC24\_2 Pastes

Covers use up to 10 days/year.

Covers use up to 1 time(s)/day.

.  
PC24\_3 Sprays

Covers use up to 6 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.17 hours per event.

.  
PC35\_1 Laundry and dish washing products

Covers use up to 365 days/year.

Covers use up to 1 time(s)/day.

Covers exposure up to 0.50 hours per event.

.  
PC35\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners)

## Use in Cleaning Agents - Consumer

Covers use up to 128 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.33 hours per event.

.  
PC35\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)  
Covers use up to 128 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 0.17 hours per event.

.  
PC38 Welding and soldering products, flux products  
Covers use up to 365 days/year.  
Covers use up to 1 time(s)/day.  
Covers exposure up to 1.00 hour per event.

### Human factors not influenced by risk management

**Potentially exposed body parts** PC3\_2 Air care, continuous action (solid and liquid) . PC3\_n Air care, continuous action (solid and liquid) - pesticidal - excipient only : Covers skin contact area up to 35.70 cm<sup>2</sup>. PC4\_2 Pouring into radiator . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) . PC35\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) : Covers skin contact area up to 428.00 cm<sup>2</sup>. PC4\_3 Lock de-icer : Covers skin contact area up to 214.40 cm<sup>2</sup>. PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners ) . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC9b\_2 Plasters and floor equalisers . PC35\_1 Laundry and dish washing products . PC35\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners) : Covers skin contact area up to 857.50 cm<sup>2</sup>. PC9a\_1 Water-borne latex wall paint . PC9a\_2 Solvent-rich, high-solid, water-borne paint . PC24\_3 Sprays : Covers skin contact area up to 428.75 cm<sup>2</sup>. PC9b\_1 Fillers and putty : Covers skin contact area up to 35.73 cm<sup>2</sup>. PC9b\_3 Modelling clay . PC9c Finger paints : Covers skin contact area up to 254.40 cm<sup>2</sup>. PC24\_1 Liquids . PC24\_2 Pastes : Covers skin contact area up to 468.00 cm<sup>2</sup>.  
PC9b\_3 Modelling clay : For each use event, assumes swallowed amount of (g): 1 g . PC9c Finger paints : For each use event, assumes swallowed amount of (g): 1.35 g .

### Other given operational conditions affecting Non-industrial exposure

**Temperature** Assumes activities are at ambient temperature (unless stated differently).

**Room size** PC3\_1 Air care, instant action (aerosol sprays) . PC3\_n Air care, instant action (aerosol sprays) - pesticidal - excipient only . PC3\_2 Air care, continuous action (solid and liquid) . PC3\_n Air care, continuous action (solid and liquid) - pesticidal - excipient only . PC8\_1 Laundry and dish-washing products . PC8\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners ) . PC8\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) . PC9a\_1 Water-borne latex wall paint . PC9a\_2 Solvent-rich, high-solid, water-borne paint . PC9a\_4 Removers (paint-, glue-, wallpaper-, sealant-remover) . PC9b\_1 Fillers and putty . PC9b\_2 Plasters and floor equalisers . PC24\_3 Sprays . PC35\_1 Laundry and dish washing products . PC35\_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, carpet cleaners, metal cleaners) . PC35\_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) . PC38 Welding and soldering products, flux products : Covers use in room size of 20 m<sup>3</sup>. PC4\_1 Washing car window . PC4\_2 Pouring into radiator . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC24\_1 Liquids : Covers use in room size of 34 m<sup>3</sup>.

**Ventilation rate** Covers use under typical household ventilation. Unless otherwise stated. PC4\_1 Washing car window . PC4\_2 Pouring into radiator . PC4\_3 Lock de-icer . PC9a\_3 Aerosol spray can . PC24\_1 Liquids : Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation.

## Use in Cleaning Agents - Consumer

### Other given operational conditions affecting Non-industrial exposure

No specific risk management measure identified beyond those operational conditions stated.

### 3. Exposure estimation (Environment 1)

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate consumer exposures, unless otherwise indicated.

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Use as a Blowing Agent - Industrial

#### Identification

**Product name** Hydrocarbons, C5, n-alkanes, isoalkanes

**EU REACH registration number** 01-2119474207-37-0002

#### 1. Title of exposure scenario

**Main title** Use as a Blowing Agent - Industrial

**Process scope** Use as a blowing agent for rigid and flexible foams, including material transfers, mixing and injection, curing, cutting, storage and packing

**Main sector** SU3 Industrial uses

#### Environment

**Environmental release category** ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**SPERC** ESVOC SPERC 4.9.v1

#### Worker

**Process category**

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

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

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

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC12 Use of blow agents in manufacture of foam.

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 8300 tonnes/year  
 Fraction of Regional tonnage used locally: 1  
 Annual site tonnage: 8300 tonnes  
 Maximum daily site tonnage: 28 tonnes

##### Frequency and duration of use

Continuous release.  
 Emission days: 300 days/year

##### Other given operational conditions affecting environmental exposure

**Emission factor - air** Release fraction to air from process (initial release prior to RMM): 1.0

**Emission factor - water** Release fraction to wastewater from process (initial release prior to RMM): 3.0E-04

**Emission factor - soil** Release fraction to soil from process (initial release prior to RMM): 0

##### Environmental factors not influenced by risk management measures

## Use as a Blowing Agent - Industrial

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
<b><u>Risk management measures</u></b>	
<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.
<b>STP details</b>	Estimated substance removal from wastewater via domestic sewage treatment: 96.0% Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 800 tonne/day Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day

### **Technical onsite conditions and measures to reduce or limit discharges to air, water and soil**

<b>Air</b>	Treat air emission to provide a typical removal efficiency of 0%.
<b>Water</b>	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite waste water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0.0\%$ .
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### **Conditions and measures related to external recovery of waste**

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
------------------------	---

## 2. Conditions of use affecting exposure (Workers - Health 1)

### **Product characteristics**

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### **Amounts used**

Not applicable.

### **Frequency and duration of use**

Covers daily exposures up to 8 hours (unless stated differently).

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

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### **Risk management measures**

## Use as a Blowing Agent - Industrial

### Bulk transfers

Limit the substance content in the product to 25%.

.

### Mixing operations

(closed systems)

No specific measures identified.

.

### Extrusion and expansion of polymer mass

No specific measures identified.

.

### Cutting and shaving

No specific measures identified.

.

### Collection and re-processing of shavings, cuttings, etc.

No specific measures identified.

.

### Product packaging

No specific measures identified.

.

### Storage

No specific measures identified.

.

### Mixing operations

(closed systems)

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

### Intermediate polymer storage

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

### Centrifuging, including discharging

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

### Drying and storage

No specific measures identified.

.

### Semi-bulk packaging

No specific measures identified.

.

### Treatment by heating

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

### Article formation in mould

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

### Cutting by heated wire

Manual

No specific measures identified.

.

### Mixing operations

(closed systems)

## Use as a Blowing Agent - Industrial

No specific measures identified.

.

Drum and small package filling  
Filling/preparation of equipment from drums or containers.

No specific measures identified.

.

Foaming  
No specific measures identified.

.

Compression  
No specific measures identified.

.

Cutting by heated wire  
No specific measures identified.

### 3. Exposure estimation (Environment 1)

**Assessment method**                      Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

**Assessment method**                      The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Use as Functional Fluids - Industrial

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Use as Functional Fluids - Industrial
<b>Process scope</b>	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment, including maintenance and related material transfers.
<b>Main sector</b>	SU3 Industrial uses
<b>Environment</b>	
<b>Environmental release category</b>	ERC7 Use of functional fluid at industrial site
<b>SPERC</b>	ESVOC SPERC 7.13a.v1
<b>Worker</b>	
<b>Process category</b>	<p>PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</p> <p>PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4 Chemical production where opportunity for exposure arises</p> <p>PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities</p> <p>PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> <p>PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</p>

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
Regional use tonnage: 10 tonnes/year  
Fraction of Regional tonnage used locally: 1  
Annual site tonnage: 10 tonnes  
Maximum daily site tonnage: 500 kg

##### Frequency and duration of use

Continuous release.  
Emission days: 20 days/year

##### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 1.0E-02
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 3.0E-04
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 1.0E-03

##### Environmental factors not influenced by risk management measures



## Use as Functional Fluids - Industrial

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
<b><u>Risk management measures</u></b>	
<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.
<b>STP details</b>	Estimated substance removal from wastewater via domestic sewage treatment: 96.0% Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 1200 tonne/day Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day

### **Technical onsite conditions and measures to reduce or limit discharges to air, water and soil**

<b>Air</b>	Treat air emission to provide a typical removal efficiency of 0%.
<b>Water</b>	Risk from environmental exposure is driven by fresh water. Prevent discharge of undissolved substance to or recover from onsite waste water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0.0\%$ .
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### **Conditions and measures related to external recovery of waste**

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
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## 2. Conditions of use affecting exposure (Workers - Health 1)

### **Product characteristics**

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### **Amounts used**

Not applicable.

### **Frequency and duration of use**

Covers daily exposures up to 8 hours (unless stated differently).

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

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### **Risk management measures**

## Use as Functional Fluids - Industrial

Bulk transfers  
(closed systems)  
No specific measures identified.

.

Drum/batch transfers  
No specific measures identified.

.

Filling of articles/equipment  
(closed systems)  
No specific measures identified.

.

Filling/preparation of equipment from drums or containers.  
No specific measures identified.

.

General exposures (closed systems)  
No specific measures identified.

.

General exposures (open systems)  
No specific measures identified.

.

General exposures (open systems)  
Operation is carried out at elevated temperature (> 20°C above ambient temperature).  
No specific measures identified.

.

Remanufacture of reject articles  
No specific measures identified.

.

Equipment cleaning and maintenance  
No specific measures identified.

.

Storage  
No specific measures identified.

### 3. Exposure estimation (Environment 1)

**Assessment method**                      Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

**Assessment method**                      The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

## **Use as Functional Fluids - Industrial**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Use as Functional Fluids - Professional

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Use as Functional Fluids - Professional
<b>Process scope</b>	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment, including maintenance and related material transfers.
<b>Main sector</b>	SU22 Professional uses
<b>Environment</b>	
<b>Environmental release category</b>	ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
<b>SPERC</b>	ESVOC SPERC 9.13b.v1
<b>Worker</b>	
<b>Process category</b>	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC20 Use of functional fluids in small devices

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
Regional use tonnage: 10 tonnes/year  
Fraction of Regional tonnage used locally: 1  
Annual site tonnage: 5.0E-03 tonnes  
Maximum daily site tonnage: 1.4E-02 kg

##### Frequency and duration of use

Continuous release.  
Emission days: 365 days/year

##### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.05
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 0.025
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0.025

##### Environmental factors not influenced by risk management measures

## Use as Functional Fluids - Professional

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
<b><u>Risk management measures</u></b>	
<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.
<b>STP details</b>	Estimated substance removal from wastewater via domestic sewage treatment: 96.0% Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 780 kg/day Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day

### **Technical onsite conditions and measures to reduce or limit discharges to air, water and soil**

<b>Air</b>	Treat air emission to provide a typical removal efficiency of N/A%.
<b>Water</b>	Risk from environmental exposure is driven by fresh water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0.0\%$ .
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### **Conditions and measures related to external recovery of waste**

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
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## **2. Conditions of use affecting exposure (Workers - Health 1)**

### **Product characteristics**

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### **Amounts used**

Not applicable.

### **Frequency and duration of use**

Covers daily exposures up to 8 hours (unless stated differently).

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

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### **Risk management measures**

## Use as Functional Fluids - Professional

Drum/batch transfers

No specific measures identified.

.

Transfer from/pouring from containers

No specific measures identified.

.

Filling/preparation of equipment from drums or containers.

No specific measures identified.

.

General exposures (closed systems)

No specific measures identified.

.

General exposures (open systems)

No specific measures identified.

.

General exposures (open systems)

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

No specific measures identified.

.

Remanufacture of reject articles

No specific measures identified.

.

Equipment maintenance

No specific measures identified.

.

Storage

No specific measures identified.

### 3. Exposure estimation (Environment 1)

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

### 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Other Consumer Uses - Consumer

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Other Consumer Uses - Consumer
<b>Process scope</b>	Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: for cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.
<b>Product category</b>	PC28 Perfumes, fragrances. PC39 Cosmetics, personal care.
<b>Main sector</b>	SU21 Consumer uses
<b>Environment</b>	
<b>Environmental release category</b>	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
<b>SPERC</b>	ESVOC SPERC 8.16.v1

#### 2. Conditions of use affecting exposure (Non-industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 5.0 tonnes/year  
 Fraction of Regional tonnage used locally: 5.0E-04  
 Annual site tonnage: 2.5E-03 tonnes  
 Maximum daily site tonnage: 6.8E-03 kg

##### Frequency and duration of use

Continuous release.  
 Emission days: 365 days/year

##### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.95
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 0.025
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0.025

##### Environmental factors not influenced by risk management measures

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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##### Risk management measures

<b>STP type</b>	Municipal STP.
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## Other Consumer Uses - Consumer

**STP details** Estimated substance removal from wastewater via domestic sewage treatment: 96.0%  
 Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 400 kg/day  
 Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

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

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

### Conditions and measures related to external recovery of waste

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

## 2. Conditions of use affecting exposure (Non-industrial - Health 1)

### Product characteristics

**Physical state** Liquid

**Concentration details** Covers percentage substance in the product up to 100% (unless stated differently).

### Amounts used

For each use event, covers use amounts up to 37.5 kg.  
 Unless otherwise stated.

### Frequency and duration of use

Covers exposure up to 2 hours per event.  
 Unless otherwise stated.

### Human factors not influenced by risk management

**Potentially exposed body parts** Covers skin contact area up to 420 cm<sup>2</sup>. Unless otherwise stated.

## 3. Exposure estimation (Environment 1)

**Assessment method** Used Petrorisk model. (Hydrocarbon Block Method)

## 4. Guidance to check compliance with the exposure scenario (Environment 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

## 3. Exposure estimation (Health 1)

**Assessment method** The ECETOC TRA tool has been used to estimate consumer exposures, unless otherwise indicated.

## 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



## Exposure scenario

### Use in Laboratories - Industrial

#### Identification

**Product name** Hydrocarbons, C5, n-alkanes, isoalkanes

**EU REACH registration number** 01-2119474207-37-0002

#### 1. Title of exposure scenario

**Main title** Use in Laboratories - Industrial

**Process scope** Use of the substance within laboratory settings, including material transfers and equipment cleaning.

**Main sector** SU3 Industrial uses

#### Environment

**Environmental release category** ERC2 Formulation into mixture  
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

**SPERC** Not applicable.

#### Worker

**Process category** PROC10 Roller application or brushing  
PROC15 Use as laboratory reagent.

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

#### Amounts used

Fraction of EU tonnage used in region: 0.1  
Regional use tonnage: 0.80 tonnes/year  
Fraction of Regional tonnage used locally: 1  
Annual site tonnage: 0.80 tonnes  
Maximum daily site tonnage: 40 kg

#### Frequency and duration of use

Continuous release.  
Emission days: 20 days/year

#### Other given operational conditions affecting environmental exposure

**Emission factor - air** Release fraction to air from process (initial release prior to RMM): 0.025

**Emission factor - water** Release fraction to wastewater from process (initial release prior to RMM): 0.02

**Emission factor - soil** Release fraction to soil from process (initial release prior to RMM): 1.0E-04

#### Environmental factors not influenced by risk management measures

**Dilution** Local freshwater dilution factor: 10  
Local marine water dilution factor: 100

#### Risk management measures

**Good practice** Common practices vary across sites, thus conservative process release estimates used.

**STP type** Municipal STP.

## Use in Laboratories - Industrial

<b>STP details</b>	<p>Estimated substance removal from wastewater via domestic sewage treatment: 96.0%</p> <p>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0%</p> <p>Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 18 tonne/day</p> <p>Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day</p>
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### Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

<b>Air</b>	Treat air emission to provide a typical removal efficiency of 0%.
<b>Water</b>	Risk from environmental exposure is driven by freshwater sediment. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0.0\%$ .
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### Conditions and measures related to external recovery of waste

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
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## 2. Conditions of use affecting exposure (Workers - Health 1)

### Product characteristics

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### Amounts used

Not applicable.

### Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

### Other given operational conditions affecting workers exposure

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### Risk management measures

Laboratory activities  
 No specific measures identified.  
 .  
 Cleaning  
 No specific measures identified.

## 3. Exposure estimation (Environment 1)

<b>Assessment method</b>	Used Petrorisk model. (Hydrocarbon Block Method)
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## 4. Guidance to check compliance with the exposure scenario (Environment 1)

## Use in Laboratories - Industrial

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination.

### 3. Exposure estimation (Health 1)

<b>Assessment method</b>	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
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### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## Exposure scenario

### Use in Laboratories - Professional

#### Identification

<b>Product name</b>	Hydrocarbons, C5, n-alkanes, isoalkanes
<b>EU REACH registration number</b>	01-2119474207-37-0002

#### 1. Title of exposure scenario

<b>Main title</b>	Use in Laboratories - Professional
<b>Process scope</b>	Use of the substance within laboratory settings, including material transfers and equipment cleaning.
<b>Main sector</b>	SU22 Professional uses
<b>Environment</b>	
<b>Environmental release category</b>	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<b>SPERC</b>	ESVOC SPERC 8.17.v1
<b>Worker</b>	
<b>Process category</b>	PROC10 Roller application or brushing PROC15 Use as laboratory reagent.

#### 2. Conditions of use affecting exposure (Industrial - Environment 1)

##### Amounts used

Fraction of EU tonnage used in region: 0.1  
 Regional use tonnage: 0.80 tonnes/year  
 Fraction of Regional tonnage used locally: 1  
 Annual site tonnage: 4.0E-04 tonnes  
 Maximum daily site tonnage: 1.1E-03 kg

##### Frequency and duration of use

Continuous release.  
 Emission days: 365 days/year

##### Other given operational conditions affecting environmental exposure

<b>Emission factor - air</b>	Release fraction to air from process (initial release prior to RMM): 0.5
<b>Emission factor - water</b>	Release fraction to wastewater from process (initial release prior to RMM): 0.5
<b>Emission factor - soil</b>	Release fraction to soil from process (initial release prior to RMM): 0

##### Environmental factors not influenced by risk management measures

<b>Dilution</b>	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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##### Risk management measures

<b>Good practice</b>	Common practices vary across sites, thus conservative process release estimates used.
<b>STP type</b>	Municipal STP.

## Use in Laboratories - Professional

<b>STP details</b>	<p>Estimated substance removal from wastewater via domestic sewage treatment: 96.0%</p> <p>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 96.0%</p> <p>Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 61 kg/day</p> <p>Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day</p>
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### Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

<b>Air</b>	Treat air emission to provide a typical removal efficiency of 0%.
<b>Water</b>	Risk from environmental exposure is driven by fresh water. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): $\geq 0.0$ . If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0.0\%$ .
<b>Soil</b>	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

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

<b>Waste treatment</b>	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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### Conditions and measures related to external recovery of waste

<b>Recovery method</b>	External recovery and recycling of waste should comply with applicable local and/or national regulations.
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## 2. Conditions of use affecting exposure (Workers - Health 1)

### Product characteristics

<b>Physical state</b>	Liquid
<b>Concentration details</b>	Covers percentage substance in the product up to 100% (unless stated differently).

### Amounts used

Not applicable.

### Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

### Other given operational conditions affecting workers exposure

<b>Setting</b>	Assumes a good basic standard of occupational hygiene is implemented.
<b>Temperature</b>	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

### Risk management measures

Laboratory activities  
No specific measures identified.

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Cleaning  
No specific measures identified.

## 3. Exposure estimation (Environment 1)

<b>Assessment method</b>	Used Petrorisk model. (Hydrocarbon Block Method)
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## 4. Guidance to check compliance with the exposure scenario (Environment 1)

## Use in Laboratories - Professional

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

### 3. Exposure estimation (Health 1)

<b>Assessment method</b>	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
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### 4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.