

# RYE OIL LTD TVO PRE MIX

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

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

### 1.1 Product identifier

Commercial Product Name: TVO PRE MIX

EC No: 232-366-4  
CAS No: 8008-20-6  
REACH Registration Number: 01-2119485517-27-0140

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

Specific use(s): Fuel  
Further information: see exposure scenarios attached to this safety data sheet.

Uses advised against: None known.

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

Company: RYE OIL LTD HARBOUR  
ROAD RYE, EAST SUSSEX  
TN31 7TE

Tel.: 01797 223374

E-mail address: INFO@RYEOIL.CO.UK

### 1.4 Emergency telephone number

01797 2233 4 : OFFICE H URS (8.00AM - 5.00PM)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### 2.1.1. Classification according to Regulation (EU) 1272/2008

The product is classified as hazardous in accordance with Regulation (EC) No. 1272/2008.

Flam. Liq. 3; H226  
Skin Irrit. 2; H315  
Asp. Tox. 1; H304  
Aquatic Chronic 2; H411  
STOT SE 3; H336

Full text of H-phrases: see section 16

#### 2.1.2. Classification according to EU Directives 67/548/EEC or 1999/45/EC

The product is classified as dangerous in accordance with Directive 67/548/EEC.

Xn; R65  
Xi; R38  
N; R51/53  
R10

Full text of R-phrases: see section 16

**2.2 Label elements**2.2.1. Labelling according to Regulation (EU) 1272/2008**CLP pictograms****Signal word: Danger****Hazard statements (CLP)**

H226 - Flammable liquid and vapour.  
 H304 - May be fatal if swallowed and enters airways.  
 H315 - Causes skin irritation.  
 H336 - May cause drowsiness or dizziness.  
 H411 - Toxic to aquatic life with long lasting effects.

**Precautionary statements (CLP)**

P102 - Keep out of reach of children.  
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P280 - Wear protective gloves/ protective clothing.  
 P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.  
 P331 - Do NOT induce vomiting.  
 P501 - Dispose of contents/ container to an approved waste disposal plant.

2.2.2. Labelling according to Directives (67/548 - 1999/45)

Not relevant

**2.3 Other hazards**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**SECTION 3: Composition/information on ingredients****3.1 Substances**

Substance name	Product identifier	%	Classification according to Directive 67/548/EEC
Kerosine (petroleum)	(CAS No.) 8008-20-6 (EC No) 232-366-4 (EC Index) 649-404-00-4 (REACH-no) 01-2119485517-27-0140	100	Xn; R65 Xi; R38 N; R51/53 R10
Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Kerosine (petroleum)	(CAS No.) 8008-20-6 (EC No) 232-366-4 (EC Index) 649-404-00-4 (REACH-no) 01-2119485517-27-0140	100	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411

Full text of R-, H- and EUH-phrases: see section 16

**3.2 Mixtures**

Not applicable

Full text of R-, H- and EUH-phrases: see section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

Inhalation: Keep at rest. Move to fresh air. Oxygen or artificial respiration if needed. Call a physician immediately.

Skin contact: Take off contaminated clothing and shoes immediately. Wash with plenty of soap and water. If skin irritation persists, call a physician. Wash contaminated clothing before reuse.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

Ingestion: Do NOT induce vomiting. Drink plenty of water. Consult a physician.

Additional advice: First aider needs to protect himself. See also section 8 Never give anything by mouth to an unconscious person or a person with cramps. Show this safety data sheet to the doctor in attendance. Treat symptomatically.

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

Inhalation: May cause irritation of respiratory tract. Inhalation may provoke the following symptoms: Cough.

Skin contact: Irritating to skin. Skin contact may provoke the following symptoms: Redness.

Eye contact: Contact with eyes may cause irritation. Eye contact may provoke the following symptoms: Redness.

Ingestion: Harmful: may cause lung damage if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

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

When symptoms persist or in all cases of doubt seek medical advice.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Extinguishing media which shall not be used for safety reasons: High volume water jet.

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

Fire hazard: Flammable

Specific hazards: Vapours may form explosive mixture with air. Vapours are heavier than air and may spread along floors. Flash back possible over considerable distance. The pressure in sealed containers can increase under the influence of heat. Possible decomposition products are: Carbon oxides, hydrogen sulphide (H<sub>2</sub>S). Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

### 5.3 Advice for firefighters

Special protective equipment for firefighters In the event of fire, wear self-contained breathing apparatus. In the event of fire, cool tanks with water spray. Evacuate personnel to safe areas. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

## SECTION 6: Accidental release measures

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

Advice for non-emergency personnel: Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Wear personal protective equipment. See also section 8. Avoid contact with skin and eyes. Do not breathe vapours or spray mist. Keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Non-sparking tools should be used. Ensure all equipment is electrically grounded before beginning transfer operations.

Advice for emergency responders: Only qualified personnel equipped with suitable protective equipment may intervene. See also section 8.

### 6.2 Environmental precautions

Do not flush into surface water or sanitary sewer system.

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

Prevent further leakage or spillage if safe to do so. Dam up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal. Large spills should be collected mechanically (remove by pumping) for disposal. Dispose of as special waste in compliance with local and national regulations. Local authorities should be advised if significant spillages cannot be contained.

### 6.4 Reference to other sections

See also section 8. See also section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Handling: Ensure adequate ventilation. Wear personal protective equipment. See also section 8. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Take precautionary measures against static discharges. Ensure all equipment is electrically grounded before beginning transfer operations. Keep away from open flames, hot surfaces and sources of ignition. Take any precaution to avoid mixing with incompatible materials. See also section 10. Take care to avoid waste and spillage when weighing, loading and mixing the product. Do not let product enter drains.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use. Keep working clothes separately. Keep away from food, drink and animal feedingstuffs.

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

Storage: Keep tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Do not store near or with any of the incompatible materials listed in section 10.

Packaging material: Store in original container.

### 7.3 Specific end use(s)

see attached exposure scenario.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Exposure limit(s)

Component:	Kerosine (petroleum) (8008-20-6)
TLV-TWA (mg/m <sup>3</sup> ):	200 (BE); 100 (PL); 250 (SE - Jet Fuel)

TLV-STEL (mg/m<sup>3</sup>): 300 (PL)

DNEL/DMEL (general population)

Long-term - systemic effects,oral: 19 mg/kg bodyweight/day

PNEC (additional information)

Substance of unknown or variable composition, complex reaction products or biological material (UVCB)

No data available

Recommended monitoring procedures

Personal monitoring. Concentration measurement in air

## 8.2 Exposure controls

Personal protective equipment: The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: In case of insufficient ventilation wear suitable respiratory equipment. Respirator with a half face mask (EN 136), Respirator with a full face mask (EN 140), Recommended Filter type: AP (EN 141). For rescue and maintenance work in storage tanks use self-contained breathing apparatus. (EN 137)

Hand protection: Rubber gloves - Nitrile rubber (EN 374). The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves.

Eye protection: Safety glasses (EN166)

Skin and body protection: Overalls, apron and boots recommended. (EN 11612, EN 1149)

Thermal hazard protection: Not required under normal use. Use dedicated equipment.

Engineering measures: Ensure adequate ventilation. Use only in area provided with appropriate exhaust ventilation. Ensure that eyewash stations and safety showers are close to the workstation location. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Organisational measures to prevent /limit releases, dispersion and exposure See also section 7

Environmental exposure controls: Do not flush into surface water or sanitary sewer system. Comply with applicable Community environmental protection legislation.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance:	liquid
Colour:	clear
Odour:	petroleum hydrocarbon odour
Odour Threshold:	0,5 mg/m <sup>3</sup> literature value
Odour Threshold:	No data available
pH:	NA: Justification for data waiving -> UVCB
Melting point/range:	No data available
Boiling point/boiling range:	90 - 300 °C
Flash point:	> 38 °C (CC PM)
Evaporation rate:	< 1 Relative evaporation rate (butylacetate=1)

Flammability (solid, gas):	not applicable
Explosion limits:	0,7 - 5 vol % (Inchem)
Vapour pressure:	1 - 21 kPa @37.8°C
Vapour density:	> 1 Relative vapour density at 20 °C (air=1)
Relative density:	0,775 - 0,84 g/cm <sup>3</sup> @ 15°C
Water solubility:	NA: Justification for data waiving -> UVCB
Solubility in other solvents:	Hydrocarbons
Partition coefficient: n-octanol/water:	NA: UVCB-> Justification for data waiving
Autoignition temperature:	> 220 °C
Decomposition temperature:	> 90 °C
Viscosity:	2,9 - 12 cSt @ -20°C 1 - 2,5 cSt @40°C
Explosive properties:	NA: Justification for data waiving, -> other justification
Oxidizing properties:	NA: Justification for data waiving -> other justification

## 9.2 Other information

Other data: Not applicable.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Flammable liquid, See also section 10.5

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Vapours may form explosive mixtures with air.

### 10.4 Conditions to avoid

Heat, flames and sparks. See also section 7 Handling and storage.

### 10.5 Incompatible materials

Oxidizing agents See also section 7 Handling and storage.

### 10.6 Hazardous decomposition products

Burning produces noxious and toxic fumes. Possible decomposition products are: Carbon oxides, hydrogen sulphide (H<sub>2</sub>S).

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Acute toxicity:	Not classified (Based on available data, the classification criteria are not met.) LD50/oral/rat = > 5000 mg/kg (OECD 401) LD50/dermal/rabbit = > 2000 mg/kg (OECD 434) LC50/inhalation/4h/rat = > 5200 mg/m <sup>3</sup> (OECD 403)
Skin corrosion/irritation:	Causes skin irritation.

	OECD Test Guideline 404
Serious eye damage/irritation:	Not classified (Based on available data, the classification criteria are not met.) Draize Test
Respiratory/skin sensitisation:	Not classified (Based on available data, the classification criteria are not met.) OECD Test Guideline 406
Germ cell mutagenicity:	Not classified (Based on available data, the classification criteria are not met.) Test Method OECD 475, 478, 479.
Carcinogenicity:	Not classified (Based on available data, the classification criteria are not met.) OECD Test Guideline 451
Reproductive toxicity:	Not classified (Based on available data, the classification criteria are not met.) OECD 421. OECD 422. NOAEL (dermal,rat/rabbit) : > 494 mg/kg bw/d NOAEL (inhalation,rat,vapour) : > 1000 mg/m3 (NOAEC) NOAEL (oral,rat) : > 3000 mg/kg bw/d
Specific target organ toxicity (single exposure):	May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure):	Not classified (Based on available data, the classification criteria are not met.) NOAEL (dermal,rat/rabbit) : > 400 mg/kg bw/d (28d) NOAEL (inhalation,rat,dust/mist/fume,90 days) : 1000 mg/m3 NOAEL (oral,rat,90 days) : 750 mg/kg/d NOAEL (inhalation,rat,vapour,90 days) : >= 24 mg/m3 (28d)
Aspiration hazard:	May be fatal if swallowed and enters airways.
Further information:	Symptoms related to the physical, chemical and toxicological characteristics See section 4.2.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecotoxicity effects:	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Acute aquatic toxicity : LC50/96h/fish = 2-5mg/L (LL50) (OECD 203) EC50/48h/daphnia = 1,4 mg/L (EL50) (OECD 202) EC50/72h/algae = 1-3 mg/L (EL50) (OECD 201) Chronic aquatic toxicity : NOEL = 0,098 mg/L (Fish), 0,48 mg/L (Daphnia)
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**12.2 Persistence and degradability**

Readily biodegradable.  
Substance is complex UVCB  
Used Petrorisk model.

**12.3 Bioaccumulative potential**

Substance is complex UVCB  
Not applicable

**12.4 Mobility in soil**

Not applicable : UVCB

**12.5 Results of PBT and vPvB assessment**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).  
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**12.6 Other adverse effects**

No data available

**SECTION 13: Disposal considerations****13.1 Waste treatment methods**

Waste from residues / unused products: Handle with care. See also section 7 Handling and storage  
Where possible recycling is preferred to disposal or incineration. Collect and dispose of waste product at an authorised disposal facility. Dispose of in accordance with local regulations.

Contaminated packaging: Do not use pressure to empty drums. Do not burn, or use a cutting torch on, the empty drum. Do not puncture or incinerate. Empty containers should be transported/delivered using a registered waste carrier to local recyclers for disposal. Dispose of in accordance with local regulations.

Additional ecological information: Do not flush into surface water or sanitary sewer system.

List of suggested waste codes/waste designations in accordance with the EWC: Classified as hazardous waste according to European Union regulations. Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: 13 07 03\* - other fuels (including mixtures) 15 01 10\* - packaging containing residues of or contaminated by dangerous substances .

**SECTION 14: Transport information****14.1 UN number**

UN-No.: 1863

**14.2 UN proper shipping name**

Proper shipping name: FUEL, AVIATION, TURBINE ENGINE  
Proper shipping name IATA/IMDG: FUEL, AVIATION, TURBINE ENGINE

**14.3 Transport hazard class(es)****14.3.1. Overland transport (ADR/RID)**

Class: 3 - Flammable liquid  
Hazard identification number (Kemler No.): 30  
Classification code (ADR): F1  
ADR/RID-Labels: 3 - Flammable liquid



14.3.2. Inland waterway transport (ADN)

ADN:

Hazards : 3+N2

Class (ADN):

3

14.3.3. Transport by sea (IMDG)

Class:

3 - Flammable liquids

14.3.4. Air transport (IATA)

Class:

3 - Flammable liquids

**14.4 Packing group**

Packing group:

III

**14.5 Environmental hazards**

Environmental hazards:



Other information:

ADN : N2.

**14.6 Special precautions for user**

no data available.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Code: IBC:

no data available.

## SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Restrictions on use:

Annex XVII: 3&40

This product contains an ingredient according to the candidate list of Annex XIV of the REACH Regulation 1907/2006/EC.:

None.

Authorisations

Not applicable

15.1.2. National regulations

WGK:

2

German storage class (LGK):

LGK 3 - Flammable liquid materials (Flashpoint < 55 °C)

Technische Regeln für Gefahrstoffe (TRGS):

TRGS 900

Risk classification according to VbF:

A II - Liquids with a flashpoint between 21°C and 55°C

ABM:

6 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. (A)

NeR (Nederlandse emissie Richtlijn):

Organic substances in vapour or gaseous form

## 15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

**Issuing date:** 15/March/2016

**Revision nr:** 2

**Supersedes:** 14/January/2013

**Safety datasheet sections which have been updated:**

1

### Full text of R-, H- and EUH-phrases:

Aquatic Chronic 2	Hazardous to the aquatic environment - chronic hazard category 2
Asp. Tox. 1	Aspiration hazard Category 1
Flam. Liq. 3	Flammable liquids Category 3
Skin Irrit. 2	skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.
R10	Flammable.
R38	Irritating to skin.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
N	Dangerous for the environment
Xi	irritating
Xn	Harmful

### Sources of key data used to compile the Safety Data Sheet

European Chemicals Bureau: <http://ecb.jrc.it>;  
CONCAWE C&L guidance;  
CSR Kerosine Concawe

### Further information

Not applicable

### Abbreviations and acronyms

ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin  
ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route  
CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC  
IATA = International Air Transport Association  
IMDG = International Maritime Dangerous Goods Code  
LEL = Lower Explosive Limit/Lower Explosion Limit  
UEL = Upper Explosion Limit/Upper Explosive Limit  
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals  
WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)  
PNEC = Predicted No Effect Concentration  
DNEL = Derived No Effect Level  
NA = not applicable

NOAEL = No observed adverse effect level

DMEL= Derived minimal effect level

NOEL= No-observed-effect level

UVCB = Substance of unknown or variable composition, complex reaction products or biological material (UVCB)

EWC = European Waste Catalogue

## Annex: Exposure scenarios

Title	Sector of use	Product category	Process category	Environmental release	SPERC
Distribution of substance	SU3		PROC1, PROC2, PROC3, PROC4, PROC8A, PROC8B, PROC15, PROC9	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	ESVOC SPERC 1.1b.v1
Formulation & (re)packing of substances and mixtures	SU3, SU10		PROC1, PROC2, PROC3, PROC4, PROC8A, PROC5, PROC8B, PROC9, PROC14, PROC15	ERC2	ESVOC SPERC 2.2.v1
Use as a fuel in industrial settings	SU3		PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16	ERC7	ESVOC SPERC 7.12a.v1
Use as a fuel in professional settings	SU22		PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16	ERC9a, ERC9b	ESVOC SPERC 9.12b.v1
Use as a fuel	SU21	PC13		ERC9a, ERC9b	ESVOC SPERC 9.12c.v1

## Exposure scenario

1. Title: Distribution of substance	
Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8A, PROC8B, PROC9, PROC15 SU3 ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOC SPERC 1.1b.v1
Processes, tasks activities covered	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. Industrial use
Assessment method	ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

## 2. Operational conditions and risk management measures

### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC8A, PROC8B, PROC9, PROC15)

PROC1: Use in closed process, no likelihood of exposure  
 PROC2: Use in closed, continuous process with occasional controlled exposure  
 PROC3: Use in closed batch process (synthesis or formulation)  
 PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8A: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 PROC8B: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC15: Use as laboratory reagent

### Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP.

### Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature. Assumes a good basic standard of occupational hygiene is implemented.	

### Risk management measures

Other risk management measures	General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other risk management measures	General exposures (closed systems)	No other specific measures identified.
Other risk management measures	CS16 - General exposures (open systems)	No other specific measures identified.
Other risk management measures	CS2 - Process sampling	No other specific measures identified.
Other risk management measures	CS36 - Laboratory activities	No other specific measures identified.
Other risk management measures	CS14 - Bulk transfers	No other specific measures identified.
Other risk management measures	CS6 - Drum and small package filling	No other specific measures identified.
Other risk management measures	CS39 - Equipment cleaning and maintenance	No other specific measures identified.
Other risk management measures	CS85 - Bulk product storage	No other specific measures identified.

**2.2 Contributing scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7)**

ERC1: Manufacture of substances  
ERC2: Formulation of preparations  
ERC3: Formulation in materials  
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles  
ERC5: Industrial use resulting in inclusion into or onto a matrix  
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)  
ERC6b: Industrial use of reactive processing aids  
ERC6c: Industrial use of monomers for manufacture of thermo-plastics  
ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers  
ERC7: Industrial use of substances in closed systems

**Product characteristics**

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic
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**Operational conditions**

Amount used	Fraction of EU tonnage used in region:	0,1
Amount used	Regional use tonnage (tons/year):	5400000
Amount used	Fraction of Regional tonnage used locally:	0,002
Amount used	Annual site tonnage (tons/year):	11000
Amount used	Maximum daily site tonnage (kg/day):	36000
Frequency and duration of use	Continuous use/release.	
Frequency and duration of use	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
Environmental factors not influenced by risk management	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,001 %
Other given operational conditions affecting environmental exposure	Release fraction to wastewater from process (initial release prior to RMM):	0,00001 %
Other given operational conditions affecting environmental exposure	Release fraction to soil from process (initial release prior to RMM):	0,00001 %

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Risk management measures		
Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater. No wastewater treatment required.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of (%):	90
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2600000
Conditions and measures related to municipal sewage treatment plant	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	

**3.Exposure estimation and reference to its source****3.1.Health**

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

**3.2.Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrork model.

**4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES****4.1.Health**

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

#### **4.2.Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.,Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

## Exposure scenario

### 1. Title: Formulation & (re)packing of substances and mixtures

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8A, PROC8B, PROC9, PROC14, PROC15 SU3, SU10 ERC2 ESVOC SPERC 2.2.v1
Processes, tasks activities covered	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. Industrial use
Assessment method	ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

### 2. Operational conditions and risk management measures

#### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8A, PROC8B, PROC9, PROC14, PROC15)

PROC1: Use in closed process, no likelihood of exposure  
 PROC2: Use in closed, continuous process with occasional controlled exposure  
 PROC3: Use in closed batch process (synthesis or formulation)  
 PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)  
 PROC8A: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 PROC8B: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation  
 PROC15: Use as laboratory reagent

#### Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP.

#### Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature. Assumes a good basic standard of occupational hygiene is implemented.	

#### Risk management measures

Other risk management measures	General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
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Other risk management measures	General exposures (closed systems)	No other specific measures identified.
Other risk management measures	CS16 - General exposures (open systems)	No other specific measures identified.
Other risk management measures	CS2 - Process sampling	No other specific measures identified.
Other risk management measures	CS36 - Laboratory activities	No other specific measures identified.
Other risk management measures	CS14 - Bulk transfers	No other specific measures identified.
Other risk management measures	CS30 - Mixing operations (open systems)	No other specific measures identified.
Other risk management measures	CS34 - Manual CS22 - Transfer from/pouring from containers	No other specific measures identified.
Other risk management measures	CS8 - Drum/batch transfers	No other specific measures identified.
Other risk management measures	CS100 - Production or preparation of articles by tableting, compression, extrusion or pelletisation	No other specific measures identified.
Other risk management measures	CS6 - Drum and small package filling	No other specific measures identified.
Other risk management measures	CS39 - Equipment cleaning and maintenance	No other specific measures identified.
Other risk management measures	CS85 - Bulk product storage	No other specific measures identified.

**2.2 Contributing scenario controlling environmental exposure (ERC2)**

ERC2: Formulation of preparations

**Product characteristics**

Other product characteristics      Substance is complex UVCB, Predominantly hydrophobic

**Operational conditions**

Amount used	Fraction of EU tonnage used in region:	0,1
Amount used	Regional use tonnage (tons/year):	5200000
Amount used	Fraction of Regional tonnage used locally:	0,0058
Amount used	Annual site tonnage (tons/year):	30000
Amount used	Maximum daily site tonnage (kg/day):	100000
Frequency and duration of use	Continuous use/release.	
Frequency and duration of use	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
Environmental factors not influenced by risk management	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	0,01 %

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Other given operational conditions affecting environmental exposure	Release fraction to wastewater from process (initial release prior to RMM):	0,0002 %
Other given operational conditions affecting environmental exposure	Release fraction to soil from process (initial release prior to RMM):	0,0001 %

**Risk management measures**

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of (%):	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	86,0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	260000
Conditions and measures related to municipal sewage treatment plant	Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	

**3.Exposure estimation and reference to its source****3.1.Health**

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

**3.2.Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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

**4.1.Health**

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.,Risk Management Measures are based on qualitative risk characterisation.,Available hazard data do not support the need for a DNEL to be established for other health effects.,Users are advised to consider national Occupational Exposure Limits or other equivalent values.,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**4.2.Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.,Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

## Exposure scenario

### 1. Title: Use as a fuel in industrial settings

Use descriptors	PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16 SU3 ERC7 ESVOC SPERC 7.12a.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. Industrial use
Assessment method	ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

### 2. Operational conditions and risk management measures

#### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16)

PROC1: Use in closed process, no likelihood of exposure  
 PROC2: Use in closed, continuous process with occasional controlled exposure  
 PROC3: Use in closed batch process (synthesis or formulation)  
 PROC8A: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 PROC8B: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

#### Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP.

#### Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature. Assumes a good basic standard of occupational hygiene is implemented.	

#### Risk management measures

Other risk management measures	General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Other risk management measures	General exposures (closed systems)	No other specific measures identified.
Other risk management measures	Use as a fuel CS107 - (closed systems)	No other specific measures identified.

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Other risk management measures	CS14 - Bulk transfers	No other specific measures identified.
Other risk management measures	CS8 - Drum/batch transfers	No other specific measures identified.
Other risk management measures	CS39 - Equipment cleaning and maintenance	No other specific measures identified.
Other risk management measures	CS85 - Bulk product storage	No other specific measures identified.

**2.2 Contributing scenario controlling environmental exposure (ERC7)**

ERC7: Industrial use of substances in closed systems

**Product characteristics**

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic
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**Operational conditions**

Amount used	Fraction of EU tonnage used in region:	0,1
Amount used	Regional use tonnage (tons/year):	550000
Amount used	Fraction of Regional tonnage used locally:	1
Amount used	Annual site tonnage (tons/year):	550000
Amount used	Maximum daily site tonnage (kg/day):	1800000
Frequency and duration of use	Continuous use/release.	
Frequency and duration of use	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
Environmental factors not influenced by risk management	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,005 %
Other given operational conditions affecting environmental exposure	Release fraction to wastewater from process (initial release prior to RMM):	0,00001 %
Other given operational conditions affecting environmental exposure	Release fraction to soil from process (initial release prior to RMM):	0 %

**Risk management measures**

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of (%):	95
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	84,6
Technical onsite conditions and measures to reduce or limit	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%):	0

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discharges, air emissions and releases to soil		
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	5300000
Conditions and measures related to municipal sewage treatment plant	Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	

**3.Exposure estimation and reference to its source****3.1.Health**

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

**3.2.Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES****4.1.Health**

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**4.2.Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

## Exposure scenario

### 1. Title: Use as a fuel in professional settings

Use descriptors	PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16 SU22 ERC9a, ERC9b ESVOC SPERC 9.12b.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. Professional use
Assessment method	ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

### 2. Operational conditions and risk management measures

#### 2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16)

PROC1: Use in closed process, no likelihood of exposure  
 PROC2: Use in closed, continuous process with occasional controlled exposure  
 PROC3: Use in closed batch process (synthesis or formulation)  
 PROC8A: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 PROC8B: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

#### Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP.

#### Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature. Assumes a good basic standard of occupational hygiene is implemented.	

#### Risk management measures

Other risk management measures	General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Other risk management measures	General exposures (closed systems)	No other specific measures identified.
Other risk management measures	Use as a fuel CS107 - (closed systems)	No other specific measures identified.
Other risk management measures	CS14 - Bulk transfers	No other specific measures identified.

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Other risk management measures	CS22 - Transfer from/pouring from containers	No other specific measures identified.
Other risk management measures	CS39 - Equipment cleaning and maintenance	No other specific measures identified.
Other risk management measures	CS85 - Bulk product storage	No other specific measures identified.

**2.2 Contributing scenario controlling environmental exposure (ERC9a, ERC9b)**

ERC9a: Wide dispersive indoor use of substances in closed systems

ERC9b: Wide dispersive outdoor use of substances in closed systems

**Product characteristics**

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic
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**Operational conditions**

Amount used	Fraction of EU tonnage used in region:	0,1
Amount used	Regional use tonnage (tons/year):	4400000
Amount used	Fraction of Regional tonnage used locally:	0,0005
Amount used	Annual site tonnage (tons/year):	2200
Amount used	Maximum daily site tonnage (kg/day):	6100
Frequency and duration of use	Continuous use/release.	
Frequency and duration of use	Number of emission days per year	365
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
Environmental factors not influenced by risk management	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from wide dispersive use (regional only):	0,001 %
Other given operational conditions affecting environmental exposure	Release fraction to wastewater from wide dispersive use:	0,00001 %
Other given operational conditions affecting environmental exposure	Release fraction to soil from wide dispersive use (regional only):	0,00001 %

**Risk management measures**

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater. No wastewater treatment required.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of (%):	Not applicable
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%):	0

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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94,7 %
Conditions and measures related to municipal sewage treatment plant	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	690000
Conditions and measures related to municipal sewage treatment plant	Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	

**3.Exposure estimation and reference to its source****3.1.Health**

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

**3.2.Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES****4.1.Health**

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**4.2.Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

## Exposure scenario

### 1. Title: Use as a fuel

Use descriptors	PC13 SU21 ERC9a, ERC9b ESVOC SPERC 9.12c.v1
Processes, tasks activities covered	Covers consumer uses in liquid fuels. Consumer use
Assessment method	ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

### 2. Operational conditions and risk management measures

#### 2.1 Contributing scenario consumer end-use (PC13)

PC13: Fuels

#### Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP.

#### Operational conditions

Amount used	unless stated differently. Covers use up to (g)	50000
Amount used	Covers skin contact area up to (cm2)	420
Frequency and duration of use	unless stated differently. Covers use up to	0,143 Uses per day
Frequency and duration of use	Covers exposure up to	2 Hours/event
Other given operational conditions affecting consumers exposure	Covers use at ambient temperatures. Unless otherwise stated	
Other given operational conditions affecting consumers exposure	Covers use in room size of (m3)	20
Other given operational conditions affecting consumers exposure	Covers use under typical household ventilation.	
Other given operational conditions affecting consumers exposure		
Other given operational conditions affecting consumers exposure	PC13 - Fuels Liquid: Automotive Refuelling	
Other given operational conditions affecting consumers exposure	PC13 - Fuels Liquid: Home space heater fuel	
Other given operational conditions affecting consumers exposure	PC13 - Fuels Liquid Garden Equipment - Use	
Other given operational conditions affecting consumers exposure	PC13 - Fuels Liquid: Garden Equipment - Refuelling	

Risk management measures		
Other risk management measures	PC13 - Fuels Liquid: Automotive Refuelling	No specific risk management measure identified beyond those operational conditions stated.
Other risk management measures	PC13 - Fuels Liquid: Home space heater fuel	No specific risk management measure identified beyond those operational conditions stated.
Other risk management measures	PC13 - Fuels Liquid Garden Equipment - Use	No specific risk management measure identified beyond those operational conditions stated.
Other risk management measures	PC13 - Fuels Liquid: Garden Equipment - Refuelling	No specific risk management measure identified beyond those operational conditions stated.

## 2.2 Contributing scenario controlling environmental exposure (ERC9a, ERC9b)

ERC9a: Wide dispersive indoor use of substances in closed systems

ERC9b: Wide dispersive outdoor use of substances in closed systems

Product characteristics	
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions		
Amount used	Fraction of EU tonnage used in region:	0,1
Amount used	Regional use tonnage (tons/year):	180000
Amount used	Fraction of Regional tonnage used locally:	0,0005
Amount used	Annual site tonnage (tons/year):	89
Amount used	Maximum daily site tonnage (kg/day):	245
Frequency and duration of use	Continuous use/release.	
Frequency and duration of use	Number of emission days per year	365
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
Environmental factors not influenced by risk management	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from wide dispersive use (regional only):	0,001 %
Other given operational conditions affecting environmental exposure	Release fraction to wastewater from wide dispersive use:	0,00001 %
Other given operational conditions affecting environmental exposure	Release fraction to soil from wide dispersive use (regional only):	0,00001 %

Risk management measures		
Conditions and measures related to municipal sewage treatment plant	Risk from environmental exposure is driven by freshwater.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%):	94,7
Conditions and measures related to municipal sewage treatment plant	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	31000
Conditions and measures related to municipal sewage treatment plant	Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d):	2000

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Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
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**3.Exposure estimation and reference to its source****3.1.Health**

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

**3.2.Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES****4.1.Health**

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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.

**4.2.Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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