

# SAFETY DATA SHEET



Revision: 24 March 2023 Version: 006

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

**JET KEROSENE V3013**

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

Product name Kerosene (petroleum) sweetened  
Product description V3013-JET KEROSENE-Kerosene (petroleum) sweetened  
Trade Name JET KEROSENE  
Product code JET  
CAS No. 91770-15-9  
EC No. 294-799-5  
REACH Registration No. 01-2119502385-46-xxxx

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

Identified use(s)	No	Exposure Scenario	Page:
	1	Distribution of Kerosene (petroleum) sweetened (Industrial)	12
	2	Formulation and (re)packing of Kerosene (petroleum) sweetened (Industrial)	15
	3	Use as a fuel (Industrial)	18
	4	Use as a fuel (Professional)	21
	5	Use as a fuel (Consumer)	24

Uses advised against Anything other than the above.

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

Company Identification Vitol SA  
Place des Bergues 3  
1201 Geneva  
Switzerland  
Telephone +31 10 498 7200  
Fax +31 10 452 9545  
E-mail (competent person) [xreach@vitol.com](mailto:xreach@vitol.com)

### 1.4 Emergency Telephone Number

Emergency Phone No. +44 (0) 1235 239 670, 24/7  
Language(s) spoken: All official European languages.

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

#### 2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Flam. Liq. 3; H226  
Asp. Tox. 1; H304  
Skin Irrit. 2; H315  
STOT SE 3; H336 (Central nervous system, Inhalation)  
Aquatic Chronic 2; H411

### 2.2 Label elements

Product description V3013-JET KEROSENE-Kerosene (petroleum) sweetened

Hazard Pictogram(s)



Signal Word(s)

DANGER

Hazard Statement(s)

H226: Flammable liquid and vapour.  
H304: May be fatal if swallowed and enters airways.

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Precautionary Statement(s)	H315: Causes skin irritation. H336: May cause drowsiness or dizziness. H411: Toxic to aquatic life with long lasting effects.  P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection. P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331: Do NOT induce vomiting.
<b>2.3 Other hazards</b>	May form explosive mixture with air. The vapour is heavier than air; beware of pits and confined spaces. Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

SUBSTANCE	CAS No.	EC No.	%W/W
Kerosene (petroleum) sweetened	91770-15-9	294-799-5	100

## SECTION 4: FIRST AID MEASURES



### 4.1 Description of first aid measures

Self-protection of the first aider	Eliminate sources of ignition. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact. Do not ingest. If swallowed then seek immediate medical assistance.
H2S Warning:	Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations. If there is any suspicion of inhalation: A self contained breathing apparatus should be worn. Remove to fresh air immediately.
Inhalation	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell.
Skin contact	IF ON SKIN (or hair): Remove contaminated clothing immediately and wash affected skin with plenty of water or soap and water. If irritation (redness, rash, blistering) develops, get medical attention.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
Ingestion	IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If unconscious, place in recovery position and get medical attention immediately. Do not give anything by mouth to an unconscious person. Get medical attention immediately. Do not wait for symptoms to appear.
<b>4.2 Most important symptoms and effects, both acute and delayed</b>	Irritation of the respiratory tract. Causes skin irritation. Slightly irritant to eyes. Aspiration into the lungs may cause chemical pneumonitis, which can be fatal.

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<b>4.3 Indication of any immediate medical attention and special treatment needed</b> Notes to a physician:	Ingestion may cause irritation of the gastrointestinal tract. Nausea, Vomiting and Diarrhoea. Treat symptomatically.  IF INHALED: If unconscious, place in recovery position and get medical attention immediately. Administer oxygen if available and artificial respiration if necessary. IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If aspiration is suspected obtain immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs.
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## SECTION 5: FIREFIGHTING MEASURES

<b>5.1 Extinguishing media</b> Suitable extinguishing media	Extinguish with sand or dry chemical. Foam, Carbon dioxide, Water fog or dry powder.
Unsuitable extinguishing media	Do not use water jet. Direct water jet may spread the fire.
<b>5.2 Special hazards arising from the substance or mixture</b>	Flammable liquid and vapour. Will float and can be reignited on surface water. Decomposes in a fire giving off toxic fumes: A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. May form explosive mixture with air. Prevent liquid entering sewers, basements and any watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. If sulphur compounds are present in appreciable amounts, combustion products may include also H <sub>2</sub> S and SO <sub>x</sub> (sulfur oxides) or sulfuric acid.
<b>5.3 Advice for firefighters</b>	Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

<b>6.1 Personal precautions, protective equipment and emergency procedures</b>	Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact with substance. Ensure adequate ventilation. Do not breathe vapour. Do not ingest. If swallowed then seek immediate medical assistance. Do not use sparking tools. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems.
H <sub>2</sub> S Warning:	Product may release Hydrogen Sulphide. Exposure controls - These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H <sub>2</sub> S alarms, Personal H <sub>2</sub> S alarms, Personal escape sets, H <sub>2</sub> S awareness training. Please see section 8 for appropriate personal protection equipment.
Small spillages:	Wear flame-resistant antistatic protective clothing.
Large spillages:	Evacuate the area and keep personnel upwind. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. Avoid all contact. Wear chemical protection suit and breathing apparatus. See Also Section: 8
<b>6.2 Environmental precautions</b>	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If necessary: Dike area to contain the spill and prevent releases to sewers, drains, or other waterways.
<b>6.3 Methods and material for containment and cleaning up</b>	Provided it is safe to do so, isolate the source of the leak. Use non-sparking equipment when picking up flammable spill. The vapour is heavier than air; beware of pits and confined spaces. Ensure that the equipment is adequately grounded. Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Wear chemical protection suit and breathing apparatus.

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Spillages onto land:	In case of soil contamination, remove contaminated soil and treat in accordance with local regulations. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a lidded container for disposal or recovery. Dispose of this material and its container as hazardous waste. <b>Small spillages:</b> Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. <b>Large spillages:</b> Cover spillage with foam to reduce evaporation. Do not use water jet.
Spillages on water or at sea:	Collect as much as possible in clean container for reuse or disposal. <b>Small spillages:</b> Contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. <b>Large spillages:</b> Open waters should be contained with floating barriers or other mechanical means and recovered, only if this is strictly necessary and if fire/explosion risks can be adequately prevented. Otherwise control the spreading of the spillage, and let the substance evaporate naturally.
<b>6.4 Reference to other sections</b>	See Section: 8,13

## SECTION 7: HANDLING AND STORAGE

<b>7.1 Precautions for safe handling</b>	Obtain special instructions before use. Keep away from sources of ignition. - No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. May form explosive mixture with air. Take action to prevent static discharges. Use non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid all contact with substance. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe vapour. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.
H2S Warning:	Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training.
<b>7.2 Conditions for safe storage, including any incompatibilities</b>	Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original packaging. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue. Empty container may contain product residue which may result in flammable or explosive vapours inside the container.
Storage temperature	Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources.
Storage measures	Keep only in original packaging.
Incompatible materials	Suitable containers: Mild steel, Stainless steel. Keep away from oxidising agents. Strong acids and Alkalis. Unsuitable containers: Synthetic materials
<b>7.3 Specific end use(s)</b>	See Section: 1.2 and/or Exposure Scenario

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>8.1 Control parameters</b>	
<b>8.1.1 Occupational exposure limits</b>	Not established
<b>8.1.2 Biological limit value</b>	Not established
<b>8.1.3 PNECs and DNELs</b>	DNEL: Not established

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PNEC: Kerosene (petroleum) sweetened is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

## 8.2 Exposure controls

### 8.2.1 Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

### 8.2.2 Individual protection measures, such as personal protective equipment

Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Keep good industrial hygiene. Always wash hands before smoking, eating and drinking. Do not eat, drink or smoke at the work place.

Refer to annexes for exposure scenarios detailing use specific exposure controls.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection



Use eye protection according to EN 166, designed to protect against liquid splashes.

Skin protection



**Hand protection:** Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.  
Recommended: Nitrile rubber

**Body protection:** Wear anti-static clothing and shoes.  
Small scale: Wear suitable coveralls to prevent exposure to the skin.  
Large scale: Chemical protection suit

Respiratory protection



When the product is heated/In case of inadequate ventilation wear respiratory protection. The use of a high efficiency filter (EN143) is recommended. Filter type A2.

Closed system(s): Not normally required

Thermal hazards

Not applicable

### 8.2.3 Environmental exposure controls

Avoid release to the environment.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Physical state	Liquid
Colour	Almost colourless to pale yellow
Odour	Characteristic
Melting point/freezing point	> - 49 °C
Boiling point or initial boiling point and boiling range	150 – 290 °C at 101 kPa
Flammability	Flammable liquid and vapour.
Lower and upper explosion limit	Not established
Flash point	23 - 59 °C at 101 kPa
Auto-ignition temperature	> 210 °C at 101 kPa

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Decomposition temperature	Not established
pH	Not established
Kinematic viscosity	< 7 mm <sup>2</sup> /s at 40 °C
Solubility	Practically insoluble
Partition coefficient: n-octanol/water (log value)	3.3 – 6.0
Vapour pressure	≤ 1 kPa at 40°C
Density and/or relative density	0.77 – 0.85 g/cm <sup>3</sup> at 15 °C
Relative vapour density	4.7 - 5 (Air = 1)
Particle characteristics	Not established

<b>9.2 Other information</b>	Vapour may create explosive atmosphere.
Upper/lower flammability or explosive limits	Flammable Limits (Lower) (%v/v): 0.7 Flammable Limits (Upper) (%v/v): 5

## SECTION 10: STABILITY AND REACTIVITY

<b>10.1 Reactivity</b>	Stable under normal conditions. Reacts with - Strong oxidising agents
<b>10.2 Chemical stability</b>	Stable under normal conditions. Hazardous polymerisation will not occur. Product may release Hydrogen Sulphide.
<b>10.3 Possibility of hazardous reactions</b>	Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Product may release Hydrogen Sulphide.
<b>10.4 Conditions to avoid</b>	Elevated temperature: > 50 °C Keep away from heat, sources of ignition and direct sunlight.
<b>10.5 Incompatible materials</b>	Keep away from oxidising agents. Strong acids and Alkalis.
<b>10.6 Hazardous decomposition products</b>	A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. Decomposes in a fire giving off toxic fumes: CO <sub>x</sub> , H <sub>2</sub> S, Sox.

## SECTION 11: TOXICOLOGICAL INFORMATION

<b>11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008</b>	All test data taken from existing ECHA registrations for the substances mentioned.
<b>Acute toxicity - Ingestion</b>	Based upon the available data, the classification criteria are not met. LD50 (oral, rat) mg/kg: >5000 (OECD 420)
<b>Acute toxicity - Inhalation</b>	Acute Tox. 4: Harmful if inhaled. LC50 (inhalation, rat) mg/l/4h: >5.28 No mortality observed (OECD 403)
<b>Acute toxicity - Skin contact</b>	Based upon the available data, the classification criteria are not met. LD50 (skin, rabbit) mg/kg: >2000 (OECD 402)
<b>Skin corrosion/irritation</b>	Skin Irrit. 2; Causes skin irritation. Irritating to skin. (rabbit) (Unnamed, 1986)
<b>Serious eye damage/irritation</b>	Based upon the available data, the classification criteria are not met. Not irritating to eyes. (rabbit) (EPA OTS 798.4500)
<b>Respiratory or skin sensitisation</b>	Based upon the available data, the classification criteria are not met. Sensitisation (guinea pig) – Negative (OECD 406)
<b>Germ cell mutagenicity</b>	Based upon the available data, the classification criteria are not met. In vitro: Negative (OECD 479) In vivo: Positive (males) Negative (females) (mouse) (Unnamed, 1988)
<b>Carcinogenicity</b>	Based upon the available data, the classification criteria are not met. Negative (mouse) (OECD 451)
<b>Reproductive toxicity</b>	Based upon the available data, the classification criteria are not met. Reproductive toxicity: Negative (rat) (OECD 415) Developmental toxicity: : Negative (rat) (OECD 414)
<b>STOT - Single Exposure</b>	STOT SE 3; May cause drowsiness and dizziness. Weight of evidence approach
<b>STOT - Repeated Exposure</b>	Based upon the available data, the classification criteria are not met. Oral: NOAEL: 750 mg/kg bw/day (rat) (OECD 408) Inhalation: No adverse effect observed (rat) (OECD 413) NOAEL ≥ 1000 mg/m <sup>3</sup> Dermal: Causes skin irritation. (rat) (OECD 411) NOAEL ≥ 495 mg/kg bw/day (rat)

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## Aspiration hazard

Asp. Tox. 1; May be fatal if swallowed and enters airways.  
Kinematic viscosity: < 7 mm<sup>2</sup>/s at 40 °C

## 11.2 Information on other hazards

### 11.2.1 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

### 11.2.2 Other information

None known

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

Short Term (acute):

Long term (chronic):

Aquatic Chronic 2; Toxic to aquatic life with long lasting effects.

NOEL (Fish) (96 hour) 2.0 mg/l (OECD 203)

The aquatic toxicity was estimated using the PETROTOX computer model.

Estimated NOEL: 0.098 mg/l

### 12.2 Persistence and degradability

Readily biodegradable (according to OECD criteria). (OECD 301F)

### 12.3 Bioaccumulative potential

The product has potential for bioaccumulation. LogKow 4.0

### 12.4 Mobility in soil

The product is predicted to have low mobility in soil.

### 12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB. None of the substances in this product fulfil the criteria for being regarded as a PBT or vPvB substance.

### 12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

### 12.7 Other adverse effects

None known

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

Dispose of this material and its container as hazardous waste. Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty. Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Waste classification according to Directive 2008/98/EC (Waste Framework Directive)

HP3, HP4, HP14

## SECTION 14: TRANSPORT INFORMATION

	<b>ADR/RID</b>	<b>IMDG/ADN</b>
14.1 UN number or ID number	UN 1863	UN 1863
14.2 UN proper shipping name	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE
14.3 Transport hazard class(es)	3	3 (N2, F)
14.4 Packing group	III	III
14.5 Environmental hazards	Environmentally hazardous substance	Classified as a Marine Pollutant.
14.6 Special precautions for user	See Section: 2	
14.7 Maritime transport in bulk according to IMO instruments	No information available.	No information available.
14.8 Additional information	HIN: 30 Tunnel restriction code: 3 D/E Limited Quantity: 5L Special provisions: 664	EmS: F-E, S-E Limited Quantity: 5L

## SECTION 15: REGULATORY INFORMATION

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

#### 15.1.1 EU regulations

Seveso

Upper Tier: 25000 tonnes

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15.1.2 National regulations	Lower Tier: 2500 tonnes
Germany	Water hazard class: 3
15.2 Chemical Safety Assessment	A REACH chemical safety assessment (CSA) has been carried out. Refer to annexes for exposure scenarios detailing use specific exposure controls.

## SECTION 16: OTHER INFORMATION

**The following sections contain revisions or new statements:** New SDS Regulation 2020/878 format, all sections have been updated to include new information. Please review SDS with care.

### References:

Existing Safety Data Sheet (SDS).

Harmonised Classification(s) for Kerosene (petroleum) sweetened (CAS No. 91770-15-9).

Existing ECHA registration(s) for Kerosene (petroleum) sweetened (CAS No. 91770-15-9) and Chemical Safety Report.

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

### Legend

ADR	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	Chemical Abstracts Service
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
EC	European Community
ECHA	European Chemicals Agency
EU	European Union
DNEL	Derived no effect level
IATA	IATA: International Air Transport Association
ICAO	ICAO: International Civil Aviation Organization
IMDG	IMDG: International Maritime Dangerous Goods
LC50	Lethal Concentration at which 50% of the population is killed
LD50	Lethal Dose at which 50% of the population is killed
LTEL	Long term exposure limit
NOAEL	No Observed Adverse Effect Level
OECD	Organisation for Economic Cooperation and Development
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	RID: Regulations concerning the international railway transport of dangerous goods
STEL	Short term exposure limit
UN	United Nations
UVCB	Unknown or Variable Composition, Complex reaction products or Biological materials
vPvB	vPvB: very Persistent and very Bioaccumulative

### Hazard classification / Classification code:

Flam. Liq. 3; Flammable liquid, Category 3  
Asp. Tox. 1; Aspiration hazard, Category 1  
Skin Irrit. 2; Skin corrosion/irritation, Category 2  
STOT SE 3; Specific Target Organ Toxicity — Single Exposure, Category 3  
Aquatic Chronic 2; Hazardous to the aquatic environment, Chronic, Category 2

### Hazard Statement(s)

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.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

### Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vitol SA gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vitol SA accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.



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**Annex to the extended Safety Data Sheet (eSDS)**

See below -

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## Kerosene (petroleum) sweetened

CAS No.

91770-15-9

EC No.

294-799-5

### Summary of Parameters

Physical Parameters			
Vapour pressure (hPa)		1 – 21 at 37.8 °C Value used for exposure assessment = 1.2E+03 Pa	
Partition Coefficient (log K <sub>ow</sub> )		1.99 – 18.02	
Aqueous solubility (mg/l)		Value used for exposure assessment = 3.8E+01 mg/l	
Molecular weight		Not applicable m.w. = 128 Value used for exposure assessment	
Biodegradability		Inherently biodegradable, not fulfilling criteria	
Human Health (DNEL)			
Workers	Short term	Inhalation (mg/m <sup>3</sup> )	No hazard identified
		Dermal (mg/kg bw/day)	No hazard identified
	Long Term	Inhalation (mg/m <sup>3</sup> )	40 ppm Value used for exposure assessment
		Dermal (mg/kg bw/day)	No hazard identified
Consumer	Inhalation (mg/m <sup>3</sup> )	40 Value used for exposure assessment	
	Dermal (mg/kg bw/day)	No hazard identified	
	Oral (mg/kg bw/day)	18.8	
Environmental Parameters (PNECs)			
Kerosene (petroleum) sweetened is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.			

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Exposure scenario 5	Use as a fuel - (Consumer)	24

## Contributing Scenarios

### Workers

PROC1 Use in closed process, no likelihood of exposure.  
PROC2 Use in closed, continuous process with occasional controlled exposure.  
(Storage) Use in closed, continuous process with occasional controlled exposure, bulk Storage.  
PROC3 Use in closed batch process (synthesis or formulation).  
(Sampling) Use in closed batch process (synthesis or formulation). Sample collection at ventilated sample points  
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) Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).  
PROC8a (manual) Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.  
Manual transfer/pouring from containers.  
(Maintenance) Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Clean down and maintenance of vessels and containers.  
(Cleaning) Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Clean down and maintenance of vessels and containers.  
(Bulk) Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Bulk transfers (closed systems).  
(Drum/batch transfers) Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Drum/batch transfers.  
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.  
PROC16 Using material as fuel sources, limited exposure to unburned product to be expected

### Environment

ERC2 Formulation of preparations  
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  
ERC9a Wide dispersive indoor use of substances in closed systems  
ERC9b Wide dispersive outdoor use of substances in closed systems

### Consumer

#### PC13 Fuels.

(Automotive refuelling).  
(Home heating fuel).  
(Garden equipment use).  
(Garden equipment refueling).

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## Exposure Scenario 1 – Distribution of Kerosene (petroleum) sweetened (Industrial)

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) – (Covers PROC1 also (Storage)) PROC3 PROC3 (Sampling) PROC4 PROC8a (Maintenance) PROC8b (Bulk) PROC9 PROC15
Chemical product category [PC]	not applicable
Article Categories [AC]	not applicable
Environmental release categories [ERC]	ERC4 ERC5 ERC6a ERC6b ERC6c ERC6d ERC7
Specific Environmental Release Categories SPERC]	ESVOC SpERC 1.1b.v1

2.0 Operational conditions and risk management measures	
<b>2.1 Control of worker exposure</b>	
<b>Product characteristics</b>	
Substance is complex UVCB. Predominantly hydrophobic.	
Physical form of product	Liquid
Vapour pressure	0.5 - 10 kPa @ STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
<b>Human factors not influenced by risk management</b>	
Potential exposure area	Not defined
<b>Frequency and duration of use</b>	
Exposure duration per day	Covers daily exposures up to 8 hours (unless stated differently).
Frequency of use (days per year)	100
<b>Other operational conditions affecting worker exposure</b>	
Area of use	All PROC's      Indoor
Characteristics of the surroundings	Not defined
<b>General measures applicable to all activities</b>	
Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.	
<b>General measures (skin irritants)</b>	
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.	
<b>Technical conditions of use</b>	
PROC1, PROC2, PROC3	Handle substance within a closed system..
PROC9	Fill containers/cans at dedicated fill points supplied with local extract ventilation. (Efficiency of at least 90 %).
<b>Organisational measures</b>	
PROC8a (Maintenance)	Drain down system prior to equipment break-in or maintenance. (Efficiency of at least 80 %).
<b>Risk management measures related to human health</b>	
Respiratory protection	No special measures are required.
Hand and/or Skin protection	No special measures are required.

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Eye Protection	No special measures are required.
<b>Other operational conditions affecting worker exposure</b>	
<p>Ensure material transfers are under containment or extract ventilation.(PROC3 (Sampling), PROC8b (Bulk)).                  Clear lines prior to de-coupling.(PROC4; PROC8b (Bulk)).                  Handle in a fume cupboard or under extract ventilation. (PROC15).                  Avoid splashing.(PROC8b (Bulk)).                  Store substance within a closed system. (PROC2 (Storage)).                  Avoid dip sampling. (PROC2 (Storage)).                  Provide extract ventilation to points where emissions occur. (PROC4).                  Have the system examined and tested against its performance standard - generally at least every 14 months (PROC15).                  Retain drain downs in sealed storage pending disposal or for subsequent recycle. (PROC8a (Maintenance)).                  Clear spills immediately. (PROC8a (Maintenance)).                  Ensure dedicated sample points are provided.(PROC2 (Storage)).</p>	
<b>2.2 Control of environmental exposure</b>	
<b>Amounts used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tons/year):	1.3E+06
Fraction of Regional tonnage used locally: tons/year	2.0E-03
Annual site tonnage (tons/year):	2.7E+03
Average daily use(kg/day)	2.7E+04
<b>Environment factors not influenced by risk management</b>	
Flow rate of receiving surface water (m³/d):	Not defined (default = 18,000)
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Operational conditions</b>	
Emission days (days/year):	100
Release fraction to air from process (initial release prior to RMM):	1.0E-03
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-05
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	57.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	0
Treat soil emission to provide a typical removal efficiency of (%):	0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Size of municipal sewage system/treatment plant (m³/d)	2.0E+03
Degradation effectiveness (%)	95.0
<b>Conditions and measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
<b>Substance release quantities after risk management measures</b>	
Release to waste water from process (mg/l)	Not defined
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2.2E+05

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

#### 3.1 Human exposure prediction

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Exposure assessment (method/calculation model)	ECETOC TRA
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Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (ppm)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.01	0.00	0.00	-	0.00
PROC2	10.0	0.25	0.00	-	0.25
PROC1/2 (Storage)	10.0	0.25	0.00	-	0.25
PROC3	25.0	0.63	0.00	-	0.63
PROC3 (Sampling)	25.0	0.63	0.00	-	0.63
PROC4	20.0	0.50	0.00	-	0.50
PROC8a (Maintenance)	10.0	0.25	0.00	-	0.25
PROC8b (bulk)	5.0	0.13	0.00	-	0.13
PROC9	5.0	0.13	0.00	-	0.13
PROC15	10.0	0.25	0.00	-	0.25

### 3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
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Kerosine is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	6.7E-03 mg/L	6.9E-03 mg/L	6.7E-05 mg/L	2.6E-03 mg/kg ww	7.2E-02 mg/kg ww	1.1E-03 mg/kg ww
Risk characterisation ratio (RCR)	2.4E-03	1.2E-01	1.0E-03	3.7E-04	5.3E-02	1.3E-03

Human exposure prediction:

Route of Exposure	Exposure (µg/kg/Day)	Risk characterisation ratio (RCR)
Oral	1.2E+00	6.5E-05
Inhalation	7.7E-01	4.1E-05

### 4. Evaluation guidance to downstream user

For scaling see	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).	
Exposure assessment instrument/tool/method	Workers	ECETOC TRA
	Environmental exposure	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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## Exposure Scenario 2 – Formulation and (re)packing of Kerosene (petroleum) sweetened (Industrial)

1.0 Contributing Scenarios	
Sector of uses [SU]	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) – (Covers PROC1 also (Storage)) PROC3 PROC3 (Sampling) PROC4 PROC5 PROC8a (Maintenance) PROC8a (manual) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC9 PROC14 PROC15
Chemical product category [PC]	not applicable
Article Categories [AC]	not applicable
Environmental release categories [ERC]	ERC2 Formulation of preparations
Specific Environmental Release Categories [SPERC]	ESVOC SpERC 2.2.v1

2.0 Operational conditions and risk management measures	
<b>2.1 Control of worker exposure</b>	
<b>Product characteristics</b>	
Physical form of product	Liquid with moderate volatility.
Vapour pressure	0.5 - 10 kPa @ STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
<b>Human factors not influenced by risk management</b>	
Potential exposure area	Not defined
<b>Frequency and duration of use</b>	
Exposure duration per day	Covers daily exposures up to 8 hours (unless stated differently).
Frequency of use (days per year)	300
<b>Other operational conditions affecting worker exposure</b>	
Area of use	All PROC's   Indoor
Characteristics of the surroundings	Not defined
<b>General measures applicable to all activities</b>	
Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.	
<b>General measures (skin irritants)</b>	
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.	
<b>Technical conditions of use</b>	
PROC1, PROC2, PROC3	Handle substance within a closed system.
<b>Organisational measures</b>	
PROC5, PROC8a (Manual), PROC14	Provide extract ventilation to points where emissions occur. (Efficiency of at least 90 %).
PROC8b (Drum/batch transfers)	Provide extract ventilation to points where emissions occur. (Efficiency of at least 97 %).
<b>Risk management measures related to human health</b>	
Respiratory protection	No special measures are required.
Hand and/or Skin protection	No special measures are required.
Eye Protection	No special measures are required.
<b>Other operational conditions affecting worker exposure</b>	
Provide extract ventilation to points where emissions occur. (PROC4).	
Clear lines prior to de-coupling. (PROC4).	

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<p>Ensure material transfers are under containment or extract ventilation.(PROC3 (Sampling)); (PROC8b (Bulk)).                  Handle in a fume cupboard or under extract ventilation.(PROC15).                  Clear lines prior to de-coupling. (PROC15).                  Avoid splashing. (PROC15).                  Use drum pumps or carefully pour from container. (PROC8a (Manual)).                  Use drum pumps. (PROC8b (Drum/batch transfers)).                  Fill containers/cans at dedicated fill points supplied with local extract ventilation.(PROC9).                  Clear spills immediately. (PROC8a (Maintenance)).                  Store substance within a closed system.(PROC2 (Storage)).                  Avoid dip sampling. (PROC2 (Storage)).                  Have the system examined and tested against its performance standard - generally at least every 14 months (PROC15).                  Drain down system prior to equipment break-in or maintenance. (PROC8a (Maintenance)).                  Retain drain downs in sealed storage pending disposal or for subsequent recycle. (PROC8a (Maintenance)).                  Ensure dedicated sample points are provided.(PROC2 (Storage)).</p>	
<b>2.2 Control of environmental exposure</b>	
<b>Amounts used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tons/year):	1.3E+06
Fraction of Regional tonnage used locally: (tons/year):	2.3E-02
Annual site tonnage (tons/year):	3.0E+04
Average daily use(kg/day)	1.0E+05
<b>Environment factors not influenced by risk management</b>	
Flow rate of receiving surface water (m <sup>3</sup> /d):	Not defined (default = 18,000)
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Operational conditions</b>	
Emission days (days/year):	300
Release fraction to air from process (initial release prior to RMM):	2.5E-02
Release fraction to wastewater from process (initial release prior to RMM):	2.0E-04
Release fraction to soil from process (initial release prior to RMM):	1.0E-04
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	94.8
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	0
Treat soil emission to provide a typical removal efficiency of (%):	0
Common practices vary across sites thus conservative process release estimates used. Do not allow uncontrolled discharge of product into the environment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Size of municipal sewage system/treatment plant (m <sup>3</sup> /d)	2.0E+03
Degradation effectiveness (%)	95.0
<b>Conditions and measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
<b>Substance release quantities after risk management measures</b>	
Release to waste water from process (mg/l)	Not defined
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	1.0E+05



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

#### 3.1 Human exposure prediction

Exposure assessment (method/calculation model) The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (ppm)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.01	0.00	0.00	-	0.00
PROC2	10.0	0.25	0.00	-	0.25
PROC1/2 (Storage)	10.0	0.25	0.00	-	0.25
PROC3	25.0	0.63	0.00	-	0.63
PROC3 (Sampling)	25.0	0.63	0.00	-	0.63
PROC4	20.0	0.50	0.00	-	0.50
PROC5	5.0	0.13	0.00	-	0.13
PROC8a (Maintenance)	10.0	0.25	0.00	-	0.25
PROC8a (Manual)	5.0	0.13	0.00	-	0.13
PROC8b (bulk)	5.0	0.13	0.00	-	0.13
PROC8b (Drum/batch transfers)	1.50	0.04	0.00	-	0.04
PROC9	5.0	0.13	0.00	-	0.13
PROC14	5.0	0.13	0.00	-	0.13
PROC15	10.0	0.25	0.00	-	0.25

#### 3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrорisk model.

Kerosine is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	5.1E-01 mg/l	5.1E-02 mg/l	5.0E-03 mg/l	5.5E-03 mg/kg ww	8.1E-01 mg/kg ww	8.1E-02 mg/kg ww
Risk characterisation ratio (RCR)	1.8E-01	7.5E-01	7.5E-02	1.6E-02	9.7E-01	9.7E-02

Human exposure prediction:

Route of Exposure	Exposure (µg/kg/Day)	Risk characterisation ratio (RCR)
Oral	6.3E+00	3.3E-04
Inhalation	1.6E+02	8.6E-03

### 4. Evaluation guidance to downstream user

For scaling see Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Exposure assessment instrument/tool/method	Workers	ECETOC TRA
	Environmental exposure	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrорisk model.

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## Exposure Scenario 3 – Use as a fuel (Industrial)

1.0 Contributing Scenarios	
Sector of uses [SU]	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC2 (General exposures) – (Covers PROC1 also) PROC2 (Storage) – (Covers PROC1 also(Storage)) PROC3 PROC8a (Maintenance) PROC8a (Cleaning) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC16
Chemical product category [PC]	not applicable
Article Categories [AC]	not applicable
Environmental release categories [ERC]	<b>ERC7 Industrial use of substances in closed systems</b>
Specific Environmental Release Categories [SPERC]	ESVOC SpERC 7.12a.v1

2.0 Operational conditions and risk management measures		
<b>2.1 Control of worker exposure</b>		
<b>Product characteristics</b>		
Physical form of product	Liquid	
Vapour pressure	0.5 - 10 kPa @ STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).	
<b>Human factors not influenced by risk management</b>		
Potential exposure area	Not defined	
<b>Frequency and duration of use</b>		
Exposure duration per day	Covers daily exposures up to 8 hours (unless stated differently).	
Frequency of use (days per year)	300	
<b>Other operational conditions affecting worker exposure</b>		
Area of use	PROC8b (bulk)	Outdoor
	All other PROC's	Indoor
Characteristics of the surroundings	Not defined	
<b>General measures applicable to all activities</b>		
Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.		
<b>General measures (skin irritants)</b>		
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.		
<b>Technical conditions of use</b>		
Not defined		
<b>Organisational measures</b>		
PROC8b (Drum/batch transfers)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). (Efficiency of at least 30 %).	
PROC8a (Maintenance)	Drain down system prior to equipment break-in or maintenance. (Efficiency of at least 80 %).	
PROC8a (Cleaning)	Apply vessel entry procedures including use of forced supplied air. (Efficiency of at least 90 %).	
<b>Risk management measures related to human health</b>		
Respiratory protection	No special measures are required.	
Hand and/or Skin protection	No special measures are required.	
Eye Protection	No special measures are required.	
<b>Other operational conditions affecting worker exposure</b>		
Handle substance within a closed system. (PROC2 (General exposures); PROC3; PROC16). Ensure operation is undertaken outdoors. (PROC8b (Bulk)). Ensure material transfers are under containment or extract ventilation. (PROC8b (Bulk)). Clear lines prior to de-coupling.(PROC8b (Bulk)). Use drum pumps. (PROC8b (Drum/batch transfers)).		

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<p>Avoid spillage when withdrawing pump. (PROC8b (Drum/batch transfers)).                  Clear spills immediately. (PROC8a (Maintenance)).                  Store substance within a closed system. (PROC2 (Storage)).                  Avoid dip sampling. (PROC2 (Storage)).                  Ensure operatives are trained to minimise exposures. (PROC8b (Bulk); PROC8b (Drum/batch transfers)).                  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. (PROC8b (Drum/batch transfers)).                  Retain drain downs in sealed storage pending disposal or for subsequent recycle. (PROC8a (Maintenance); PROC8a (Cleaning)).                  Transfer via enclosed lines. (PROC8a (Cleaning)).                  Ensure dedicated sample points are provided. (PROC2 (Storage)).</p>	
<b>2.2 Control of environmental exposure</b>	
<b>Amounts used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tons/year):	5.4E+05
Fraction of Regional tonnage used locally: (tons/year):	1.0E+00
Annual site tonnage (tons/year):	5.4E+05
Average daily use(kg/day)	1.8E+06
<b>Environment factors not influenced by risk management</b>	
Flow rate of receiving surface water (m <sup>3</sup> /d):	Not defined (default = 18,000)
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Operational conditions</b>	
Emission days (days/year):	300
Release fraction to air from process (initial release prior to RMM):	5.0E-02
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05
Release fraction to soil from process (initial release prior to RMM):	0
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	94.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	0
Treat soil emission to provide a typical removal efficiency of (%):	Not defined
Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Size of municipal sewage system/treatment plant (m <sup>3</sup> /d)	2000
Degradation effectiveness (%)	95
<b>Conditions and measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.	
<b>Substance release quantities after risk management measures</b>	
Release to waste water from process (mg/l)	Not defined
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2.1E+06

<b>3. Exposure estimation and reference to its source</b>	
<b>3.1 Human exposure prediction</b>	
Exposure assessment (method/calculation model)	ECETOC TRA

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Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (mg/m <sup>3</sup> )	Risk characterisation ratio (RCR)	dermal exposure(mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1/2 (General exposures)	10.0	0.25	0.00	-	0.25
PROC1/2 (Storage)	10.0	0.25	0.00	-	0.25
PROC3	25.0	0.63	0.00	-	0.63
PROC8a (Maintenance)	10.0	0.25	0.00	-	0.25
PROC8a (Cleaning)	5.00	0.13	0.00	-	0.13
PROC8b (bulk)	35.0	0.88	0.00	-	0.88
PROC8b (Drum/batch transfers)	35.0	0.88	0.00	-	0.88
PROC16	5.00	0.13	0.00	-	0.13

### 3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

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

Kerosene is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	4.5E-01 mg/l	4.5E-02 mg/l	4.5E-03 mg/l	9.7E-03 mg/kg ww	7.3E-01 mg/kg ww	7.3E-02 mg/kg ww
Risk characterisation ratio (RCR)	1.6E-01	6.7E-01	6.7E-02	2.8E-02	8.6E-01	8.6E-02

Human exposure prediction:

Route of Exposure	Exposure (µg/kg/Day)	Risk characterisation ratio (RCR)
Oral	6.5E+00	3.4E-04
Inhalation	2.9E+02	1.5E-02

### 4. Evaluation guidance to downstream user

For scaling see	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).	
Exposure assessment instrument/tool/method	Workers	ECETOC TRA
	Environmental exposure	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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## Exposure Scenario 4 – Use as a fuel (Professional)

1.0 Contributing Scenarios	
Sector of uses [SU]	SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen) <a href="#">Click or tap here to enter text.</a>
Process category [PROC]	PROC2 (General exposures) PROC2 (Storage) – (Covers PROC1 also (Storage)) PROC3 PROC8a (Maintenance) PROC8a (Cleaning) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC16
Chemical product category [PC]	not applicable
Article Categories [AC]	not applicable
Environmental release categories [ERC]	<b>ERC9a Wide dispersive indoor use of substances in closed systems</b> <b>ERC9b Wide dispersive outdoor use of substances in closed systems</b>
Specific Environmental Release Categories [SPERC]	ESVOC SpERC 9.12b.v1

2.0 Operational conditions and risk management measures		
<b>2.1 Control of worker exposure</b>		
<b>Product characteristics</b>		
Physical form of product	Liquid	
Vapour pressure	0.5 - 10 kPa @ STP	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).	
<b>Human factors not influenced by risk management</b>		
Potential exposure area	Not defined	
<b>Frequency and duration of use</b>		
Exposure duration per day	Covers daily exposures up to 8 hours (unless stated differently).	
Frequency of use (days per year)	365	
<b>Other operational conditions affecting worker exposure</b>		
Area of use	PROC8b (bulk)	Outdoor
	All other PROC's	Indoor
Characteristics of the surroundings	Not defined	
<b>General measures applicable to all activities</b>		
Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.		
<b>General measures (skin irritants)</b>		
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.		
<b>Technical conditions of use</b>		
Not defined		
<b>Organisational measures</b>		
PROC8b (Bulk)	Ensure operatives are trained to minimise exposures. (Efficiency of at least 15%)	
PROC8b (Drum/batch transfers)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). (Efficiency of at least 30 %).	
PROC8a (Maintenance)	Drain down system prior to equipment break-in or maintenance. (Efficiency of at least 80 %).	
PROC8a (Cleaning)	Apply vessel entry procedures including use of forced supplied air. (Efficiency of at least 80 %).	
<b>Risk management measures related to human health</b>		
Respiratory protection	No special measures are required.	
Hand and/or Skin protection	No special measures are required.	
Eye Protection	No special measures are required.	
<b>Other operational conditions affecting worker exposure</b>		
Handle substance within a closed system. (PROC2 (General exposures); PROC3; PROC16).		

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Ensure operation is undertaken outdoors.(PROC8b (Bulk)).  
 Ensure material transfers are under containment or extract ventilation.(PROC8b (Bulk)).  
 Clear lines prior to de-coupling. (PROC8b (Bulk)).  
 Use drum pumps or carefully pour from container. (PROC8b (Drum/batch transfers)).  
 Avoid spillage when withdrawing pump. (PROC8b (Drum/batch transfers)).  
 Clear spills immediately. (PROC8a (Maintenance)).  
 Transfer via enclosed lines. (PROC8a (Cleaning)).  
 Store substance within a closed system. (PROC2 (Storage)).  
 Avoid dip sampling.(PROC2 (Storage)).  
 Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. (PROC8b (Drum/batch transfers)).  
 Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a (Maintenance); PROC8a (Cleaning)).  
 Ensure dedicated sample points are provided.(PROC2 (Storage)).

## 2.2 Control of environmental exposure

### Amounts used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tons/year):	7.1E+05
Fraction of Regional tonnage used locally: (tons/year):	5.0E-04
Annual site tonnage (tons/year):	3.6E+02
Average daily use(kg/day)	9.8E+02

### Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	Not defined (default = 18,000)
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

### Operational conditions

Emission days (days/year):	365
Release fraction to air from wide dispersive use (regional only):	1.0E-03
Release fraction to wastewater from wide dispersive use:	1.0E-05
Release fraction to soil from wide dispersive use (regional only):	0.00001

### Technical conditions and measures at process level (source) 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. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Treat air emission to provide a typical removal efficiency of (%):	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	54.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	0
Treat soil emission to provide a typical removal efficiency of (%):	0

Common practices vary across sites thus conservative process release estimates used.

### Organisational measures to prevent/limit release from 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

Size of municipal sewage system/treatment plant (m³/d)	2000
Degradation effectiveness (%)	95.0

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

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

This substance is consumed during use and no waste of the substance is generated.

### Substance release quantities after risk management measures

Release to waste water from process (mg/l)	Not defined
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	9.0E+03

## 3. Exposure estimation and reference to its source

### 3.1 Human exposure prediction

Exposure assessment (method/calculation model)	ECETOC TRA
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Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (ppm)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC2 (General exposures)	20.0	0.50	0.00	-	0.50
PROC1/2 (Storage)	20.0	0.50	0.00	-	0.50
PROC3	25.0	0.63	0.00	-	0.63
PROC8a (Maintenance)	20.0	0.50	0.00	-	0.50
PROC8a (Cleaning)	20.0	0.50	0.00	-	0.50
PROC8b (bulk)	29.8	0.74	0.00	-	0.74
PROC8b (Drum/batch transfers)	35.0	0.88	0.00	-	0.88
PROC16	10.0	0.25	0.00	-	0.25

### 3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

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

Kerosine is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.5E-04 mg/l	6.2E-03 mg/l	2.8E-05 mg/l	2.7E-03 mg/kg ww	6.2E-02 mg/kg ww	6.8E-04 mg/kg ww
Risk characterisation ratio (RCR)	8.9E-05	1.1E-01	4.9E-04	7.9E-04	4.1E-02	1.6E-04

Human exposure prediction

Route of Exposure	Exposure (µg/kg/Day)	Risk characterisation ratio (RCR)
Oral	1.2E+00	6.4E-05
Inhalation	7.1E-01	3.7E-05

### 4. Evaluation guidance to downstream user

For scaling see	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).	
Exposure assessment instrument/tool/method	Workers	ECETOC TRA
	Environmental exposure	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

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## Exposure Scenario 5 – Use as a fuel (Consumer)

1.0 Contributing Scenarios	
Sector of uses [SU]	SU21 Consumer uses: Private households (= general public = consumers)
Process category [PROC]	not applicable
Chemical product category [PC]	PC13 (Automotive refuelling) PC13 (Home heating fuel) PC13 (Garden equipment use) PC13 (Garden equipment refueling)
Article Categories [AC]	not applicable
Environmental release categories [ERC]	<b>ERC9a Wide dispersive indoor use of substances in closed systems</b> <b>ERC9b Wide dispersive outdoor use of substances in closed systems</b>
Specific Environmental Release Categories SPERC	ESVOC SpERC 9.12c.v1

2.0 Operational conditions and risk management measures													
<b>2.1 Control of worker exposure</b>													
<b>Product characteristics</b>													
Physical form of product	Liquid												
Vapour pressure	>10Pa (STP)												
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).												
<b>Human factors not influenced by risk management</b>													
Potential exposure area	<table border="1"> <thead> <tr> <th>Chemical product category [PC]</th> <th>Category</th> <th>Skin Contact (cm<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">PC13</td> <td>Automotive refuelling</td> <td>210</td> </tr> <tr> <td>Home heating fuel</td> <td>210</td> </tr> <tr> <td>Garden equipment use</td> <td>-</td> </tr> <tr> <td>Garden equipment refueling</td> <td>420</td> </tr> </tbody> </table>	Chemical product category [PC]	Category	Skin Contact (cm <sup>2</sup> )	PC13	Automotive refuelling	210	Home heating fuel	210	Garden equipment use	-	Garden equipment refueling	420
	Chemical product category [PC]	Category	Skin Contact (cm <sup>2</sup> )										
	PC13	Automotive refuelling	210										
		Home heating fuel	210										
		Garden equipment use	-										
Garden equipment refueling		420											
<b>Frequency and duration of use</b>													
Exposure duration (hours/Event)	<table border="1"> <thead> <tr> <th>Chemical product category [PC]</th> <th>Category</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td rowspan="4">PC13</td> <td>Automotive refuelling</td> <td>0.05</td> </tr> <tr> <td>Home heating fuel</td> <td>0.03</td> </tr> <tr> <td>Garden equipment use</td> <td>2.00</td> </tr> <tr> <td>Garden equipment refueling</td> <td>0.03</td> </tr> </tbody> </table>	Chemical product category [PC]	Category	Duration	PC13	Automotive refuelling	0.05	Home heating fuel	0.03	Garden equipment use	2.00	Garden equipment refueling	0.03
	Chemical product category [PC]	Category	Duration										
	PC13	Automotive refuelling	0.05										
		Home heating fuel	0.03										
		Garden equipment use	2.00										
Garden equipment refueling		0.03											
Frequency of use (days per year)	<table border="1"> <thead> <tr> <th>Chemical product category [PC]</th> <th>Category</th> <th>Frequency of use</th> </tr> </thead> <tbody> <tr> <td rowspan="4">PC13</td> <td>Automotive refuelling</td> <td>52</td> </tr> <tr> <td>Home heating fuel</td> <td>365</td> </tr> <tr> <td>Garden equipment use</td> <td>26</td> </tr> <tr> <td>Garden equipment refueling</td> <td>26</td> </tr> </tbody> </table>	Chemical product category [PC]	Category	Frequency of use	PC13	Automotive refuelling	52	Home heating fuel	365	Garden equipment use	26	Garden equipment refueling	26
	Chemical product category [PC]	Category	Frequency of use										
	PC13	Automotive refuelling	52										
		Home heating fuel	365										
		Garden equipment use	26										
Garden equipment refueling		26											
Amounts used (g/Event)	<table border="1"> <thead> <tr> <th>Chemical product category [PC]</th> <th>Category</th> <th>Mass</th> </tr> </thead> <tbody> <tr> <td rowspan="4">PC13</td> <td>Automotive refuelling</td> <td>50,000</td> </tr> <tr> <td>Home heating fuel</td> <td>1,500</td> </tr> <tr> <td>Garden equipment use</td> <td>1,000</td> </tr> <tr> <td>Garden equipment refueling</td> <td>1,000</td> </tr> </tbody> </table>	Chemical product category [PC]	Category	Mass	PC13	Automotive refuelling	50,000	Home heating fuel	1,500	Garden equipment use	1,000	Garden equipment refueling	1,000
	Chemical product category [PC]	Category	Mass										
	PC13	Automotive refuelling	50,000										
		Home heating fuel	1,500										
		Garden equipment use	1,000										
Garden equipment refueling		1,000											
<b>Operational conditions</b>													
Area of use	Not defined												
Characteristics of the surroundings													



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	Chemical product category [PC]	Category	Room size (m <sup>3</sup> )
	PC13	Automotive refuelling	100, or: outdoor
		Home heating fuel	20
		Garden equipment use	100, or: outdoor
		Garden equipment refueling	34
<b>Risk management measures</b>			
Respiratory protection	No specific measures identified.		
Hand/Skin protection	No specific measures identified.		
Eye Protection	No specific measures identified.		
<b>2.2 Control of environmental exposure</b>			
<b>Amounts used</b>			
Fraction of EU tonnage used in region:	0.1		
Regional use tonnage (tons/year):	7.6E+04		
Fraction of Regional tonnage used locally: (tons/year):	5.0E-04		
Annual site tonnage (tons/year):	3.8E+01		
Maximum daily site tonnage (kg/day):	1.0E+02		
<b>Environment factors not influenced by risk management</b>			
Flow rate of receiving surface water (m <sup>3</sup> /d):	Not defined (default = 18,000)		
Local freshwater dilution factor:	10		
Local marine water dilution factor:	100		
<b>Operational conditions</b>			
Emission days (days/year):	365		
Release fraction to air from wide dispersive use (regional only):	1.0E-03		
Release fraction to wastewater from wide dispersive use:	1.0E-05		
Release fraction to soil from wide dispersive use (regional only):	1.0E-05		
<b>Technical conditions and measures at process level (source) to prevent release</b>			
Not defined			
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>			
Treat air emission to provide a typical removal efficiency of (%):	0		
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	54.0		
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	0		
Treat soil emission to provide a typical removal efficiency of (%):	0		
<b>Organisational measures to prevent/limit release from site</b>			
Do not apply industrial sludge to natural soils.			
<b>Conditions and measures related to municipal sewage treatment plant</b>			
Size of municipal sewage system/treatment plant (m <sup>3</sup> /d)	2000		
Degradation effectiveness (%)	95.0		
<b>Conditions and measures related to external treatment of waste for disposal</b>			
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.			
<b>Conditions and measures related to external recovery of waste</b>			
This substance is consumed during use and no waste of the substance is generated.			
<b>Substance release quantities after risk management measures</b>			
Release to waste water from process (mg/l)	Not defined		
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	9.6E+02		

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

#### 3.1 Human exposure prediction

Exposure assessment (method/calculation model) ECETOC TRA

Yearly Use (Chronic):

Process category [PROC]	Inhalation		Dermal		Combined Risk characterisation ratio (RCR)
	inhalation exposure (mg/m <sup>3</sup> )	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	
PROC13 (Automotive refuelling)	0.29	0.01	0.50	0.00	0.01
PROC13 (Home heating fuel)	2.04	0.05	3.50	0.00	0.05

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PROC13 (Garden equipment use)	0.68	0.02	0.00	0.00	0.02
PROC13 (Garden equipment refueling)	0.08	0.00	0.49	0.00	0.00

### 3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Kerosine is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.6E-05 mg/l	6.2E-03 mg/l	2.5E-05 mg/l	2.6E-03 mg/kg ww	6.1E-02 mg/kg ww	6.5E-04 mg/kg ww
Risk characterisation ratio (RCR)	9.5E-06	1.1E-01	4.6E-04	4.1E-04	4.0E-02	1.2E-04

Human exposure prediction:

Route of Exposure	Exposure (µg/kg/Day)	Risk characterisation ratio (RCR)
Oral	1.2E+00	6.4E-05
Inhalation	7.1E-01	3.7E-05

### 4. Evaluation guidance to downstream user

For scaling see	Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).	
Exposure assessment instrument/tool/method	Workers	ECETOC TRA
	Environmental exposure	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.