

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

1.1 Product identifier

Product name: Kerosine (petroleum)

Synonyms: Kerosene

CAS No.: 8008-20-6
EC No.: 232-366-4
Index No.: 649-404-00-4
REACH Registration No.: 01-2119485517-27-XXXX

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

Identified use(s): Fuel.

Uses advised against: Follow supplier's recommendations on correct use of the product.
Uses other than those covered by the exposure scenarios included in this safety data sheet are not supported.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Certas Energy UK Limited
302 Bridgewater Place
Birchwood Park
Warrington
Cheshire
WA3 6XG

Telephone: 0800 685 685

E-mail: hse.admin@certasenergy.co.uk

1.4 Emergency telephone number

In case of emergency, call: 0330 123 9940 (24 hours, 7 days)

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No. 1272/2008 (CLP)

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

2.1.2. Classification according to Directive 67/548/EEC (CHIP)

R10
Irritant; Xi; R38
Harmful; Xn; R65
R67
Dangerous for the environment; N; R51/53

2.2 Label elements

2.2.1. Label according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictogram(s):



Signal Word:

Danger.

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.

Precautionary Statement(s):

P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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.
P405: Store locked up.
P501: Dispose of contents/container to approved disposal facility.

Supplemental Hazard information (EU):

None.

2.2.2. Label according to Directive 67/548/EEC (CHIP)

Hazard pictogram(s):



Indications of danger:

Harmful, Dangerous for the environment

Hazard Statement(s):

R10: Flammable.
R38: Irritating to skin.
R65: Harmful: may cause lung damage if swallowed.
R67: Vapours may cause drowsiness or dizziness.
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Precautionary Statement(s):

S2: Keep out of the reach of children.
S3: Do not breathe vapour.
S24: Avoid contact with skin.
S29: Do not empty into drains.
S36/37: Wear suitable protective clothing and gloves.

S43: In case of fire use foam/dry powder/AFFF/carbon dioxide – NEVER USE WATER.

S61: Avoid release to the environment. Refer to special instructions / safety data sheets.

S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this label or container.

2.3 Other hazards

The product does not meet the criteria for PBT or vPvB substances.

SECTION 3: Composition/Information on Ingredients

3.1 Substances

Chemical name	% w/w	CAS No.	EC No.	Index No.	Classification (Regulation (EC) No. 1272/2008 (CLP))	Classification (Directive 67/548/EEC)
Kerosine (petroleum) <i>REACH: 01-2119485517-27-XXXX</i>	100	8008-20-6	232-366-4	649-404-00-4	Flam. Liq. 3; H226 Asp. Tox. 1; H304 Skin Irrit. 2; H315 STOT SE 3; H336 Aquatic Chronic 2; H411	R10 Xi; R38 Xn; R65 R67 N; R51/53

See Section 16 for full description of R phrases and H statements.

Total sulphur: < 0.1%

SECTION 4: First Aid Measures

4.1 Description of first aid measures

INHALATION:

Remove person to fresh air and keep comfortable for breathing. Keep warm and at rest. If symptoms persist, obtain medical attention.

SKIN CONTACT:

Remove contaminated clothing immediately. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

EYE CONTACT:

Remove contact lenses if present and easy to do. Wash eyes immediately with plenty of water, making sure to rinse under eyelids. If symptoms persist, obtain medical attention.

INGESTION:

Obtain medical attention immediately. Do not induce vomiting. Do not give anything by mouth because of risk of material entering the lungs and causing lung damage. If person is drowsy or unconscious and vomiting, place on left side with head down. If possible, do not leave unattended and observe closely for adequacy of breathing.

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

Skin contact causes irritation, redness and pain. Repeated exposure may cause skin dryness or cracking. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia.

4.3 Indication of any immediate medical attention and special treatments needed:

In case of accident or if you feel unwell, seek medical advice immediately. If swallowed, patient should be monitored for signs of breathing difficulty as effects of aspiration may be delayed for up to 48 hours. If breathing is laboured, oxygen should be administered by qualified personnel.

SECTION 5: Fire-fighting Measures

5.1 Extinguishing Media

Suitable extinguishing media: Foam, CO2 or dry powder.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. The product will float on surface water and can reignite. Containers exposed to heat may burst due to increase in pressure.

Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

5.3 Advice for fire-fighters

A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Move undamaged containers from fire area if this can be done safely. Keep fire exposed containers cool by spraying with water. Do not allow to enter drains, sewers or watercourses.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use only non-sparking tools. Use explosion-proof electrical, ventilating and lighting equipment. Caution – spillage area may be slippery.

Keep upwind. Ensure adequate ventilation. Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable personal protective equipment. Wear appropriate respirator when ventilation is inadequate. (See Section 8).

6.1.2 For emergency responders

Keep unnecessary personnel away. Wear suitable protective clothing (See Section 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Collect spillage. 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 spill occurs on water notify the appropriate authorities and advise shipping of any hazard.

6.3 Methods and materials for containment and clearing up

6.3.1 For containment

Stop the leak if it is safe to do so. Contain the spillage with sand, earth or any suitable adsorbent material.

6.3.2 For cleaning up

Use sand, earth or any suitable non-combustible adsorbent material to adsorb spillages. Using non-sparking tools transfer the contaminated absorbent material into a container for disposal.

For spillages on water, remove use appropriate methods such as skimming, booms or adsorbents. For spillages onto soil, remove contaminated soil for remediation or disposal in accordance with local regulations.

Waste containers used should be plastic-lined sealable drums. Containers should be sealed before being disposed of via an authorised waste disposal contractor.

6.3.3 Other advice

None.

6.4 Reference to other sections

See Section 8 for personal protective equipment. See Section 13 for waste disposal.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Use only outdoors or in a well-ventilated area. Provide adequate ventilation, including local extraction, to ensure occupational exposure limits are not exceeded. Avoid breathing vapours/spray. Avoid contact with skin and eyes. Wear suitable personal protective equipment (See Section 8).

Do not eat, drink or smoke in the vicinity of the product. Wash thoroughly after handling. Take off contaminated clothing and wash it before reuse. Contaminated clothing should be thoroughly cleaned or disposed of as hazardous waste.

Product transfer

Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Tank cleaning

Cleaning, inspection and maintenance of storage tanks is a specialist operation that requires the implementation of strict procedures and precautions. These include issue of work permits, gas-freeing of tanks, using a manned safety harness, lifelines and wearing air-supplied breathing apparatus. Prior to entry and while cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and explosimeter. Additional precautions are required where the tank may have previously contained leaded gasoline.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Keep away from direct sunlight. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool. Empty containers retain product residue and can be hazardous.

Keep away from oxidising agents, reducing agents.

This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep in a bunded area with a sealed floor to

provide containment against spillage. Stack drums to a height not exceeding three metres without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Recommended Storage Container materials

For containers or container linings use mild steel or stainless steel, aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM) which have specifically tested for compatibility with the product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Storage Container materials

Synthetic materials such as plastics and fiberglass may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However some may be suitable for glove materials.

7.3 Specific end uses(s)

Refer to supplemental exposure scenarios attached or 'fuel for oil-fired heating systems'.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Workplace exposure limits

Source: EH40/2005, 2nd Ed., 2011.

None assigned.

Other exposure limits

Source: American Conference of Governmental Industrial Hygienists (ACGIH)

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Kerosine (petroleum)	8008-20-6	-	200	-	-	Skin

Skin: Can be absorbed through the skin.

DNELs (Workers)

None assigned.

DNELs (Consumers)

Ingestion: 18.8 mg/kg bw/day.

PNECs

None assigned.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation to ensure that occupational exposure limits are not exceeded. Local extraction may be required. Eye wash and quick-drench shower facilities should be available in the work area. Contaminated clothing and shoes should be thoroughly washed before reuse.

8.2.2 Personal protection

Eye protection:

Goggles or safety glasses with side shields giving complete

Kerosene

protection to eyes. (EN 166). Depending on conditions of use, close-fitting eye protection and a face shield may be necessary.

Skin protection:

Hand protection: Chemical-resistant gloves. (EN 374). Suitable glove material: nitrile, neoprene or PVC (breakthrough time > 240 minutes). Contact glove supplier to confirm suitable glove material, thickness and breakthrough times.

Other: Long sleeve protective clothing. Nitrile, neoprene or PVC apron. Rubber boots.

Respiratory protection: Where airborne levels below the exposure limits cannot be maintained, wear an air-purifying respirator (EN 140) with a Type A/P2 filter or better suitable for organic gases and vapours with a boiling point above 65°C. (EN 14387).

Thermal hazards: Wear suitable temperature resistant gloves and protective clothing if the product is heated.

8.2.3 Environmental exposure controls

Inform environmental manager of all incidents involving this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Data given below are typical values

Appearance:	Colourless liquid.
Odour:	Kerosene.
Odour threshold:	Not available.
pH:	Not applicable.
Melting/freezing point:	< -47°C
Initial boiling point and boiling range:	140 – 300°C
Flash point:	> 38°C
Evaporation rate:	Not available.
Flammability (solid; gas):	Not applicable.
Upper/lower flammability or explosive limits:	0.5% – 6.0% (v/v in air)
Vapour pressure:	3 kPa (20°C)
Vapour density:	> 1 (Air = 1)
Relative density:	0.77 – 0.82 (15°C) (Water = 1)
Solubility(ies):	Immiscible in water. Miscible in aromatic solvents.
Partition coefficient: n-octanol/water:	Log Kow: 3-6 (approximate)
Auto-ignition temperature:	250°C
Decomposition temperature:	Not available.
Viscosity:	1.3 – 2.9 cSt (20°C)
Explosive properties:	Not explosive. Vapour may form explosive mixture in air.
Oxidising properties:	Not oxidising.

9.2 Other information

Pour point: < -47°C

SECTION 10: Stability and Reactivity

10.1	Reactivity	Reacts with oxidising agents.
10.2	Chemical stability	Stable under normal conditions.
10.3	Possibility of hazardous reactions	No hazardous reactions expected during normal use.
10.4	Conditions to avoid	Keep away from sources of ignition, hot surfaces, direct sunlight. Prevent accumulation of vapours. Contact with incompatible materials.
10.5	Incompatible materials	Oxidising agents e.g. chlorates and ammonium nitrate which may be used in agriculture. Reducing agents.
10.6	Hazardous decomposition products	Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity	LD ₅₀ (oral/rat): > 5,000 mg/kg LD ₅₀ (dermal/rabbit): > 2,000 mg/kg LC ₅₀ (inhalation/rat/vapour): > 5.28 mg/L air (analytical), 4 h
Skin corrosion/irritation	Causes skin irritation. Repeated exposure may cause skin dryness or cracking.
Serious eye damage/irritation	May cause slight eye irritation.
Skin sensitisation	Not expected to be a skin sensitiser.
Respiratory sensitisation	Not expected to be a respiratory sensitiser.
Germ cell mutagenicity	The product does not contain substances classified as mutagenic above the classification thresholds.
Carcinogenicity	The product does not contain substances classified as carcinogenic above the classification thresholds.
Reproductive toxicity	The product does not contain substances classified for reproductive toxicity above the classification thresholds.
Specific Target Organ Toxicity – single exposure	May cause drowsiness or dizziness.
Specific Target Organ Toxicity – repeated exposure	Based on the available data, the classification criteria are not met. Excessive and prolonged inhalation of mists may cause a chronic inflammatory reaction of the lungs and a form of pulmonary fibrosis.
Aspiration hazard	May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia.

Information on likely routes of exposure

Inhalation	May cause drowsiness or dizziness.
Skin contact	Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Kerosene

Eye contact

May cause slight eye irritation.

Ingestion

May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia. Ingestion may cause irritation of the mouth and digestive tract.

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact causes irritation, redness and pain. Repeated exposure may cause skin dryness or cracking. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia.

Mixture versus substance information

No data available.

Other information

None.

SECTION 12: Ecological Information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

Acute toxicity studies on samples of jet fuel and kerosene streams show acute toxicity values greater than 1 mg/L, typically in the range 1-10 mg/L. Tests were carried out on water accommodated fractions (WAF) in closed systems to prevent evaporative loss.

Kerosine (petroleum), hydrodesulfurised:

EL₅₀ (*Daphnia magna*): 1.4 mg/L, 48 h (WAF)

NOEL (*Daphnia magna*): 0.3 mg/L, 48 h (WAF)

NOEL (*Daphnia magna*): 0.48 mg/L, 21 days (WAF)

LOEL (*Daphnia magna*): 1.2 mg/L, 21 days (WAF)

EL₅₀ (*Daphnia magna*): 0.89 mg/L, 21 days (reproduction)(WAF)

EL₅₀ (*Raphidocelis subcapitata*): 1-3 mg/L, 72 h (growth rate) (WAF)

NOEL (*Raphidocelis subcapitata*): 1.0 mg/L, 72 h (growth rate) (WAF)

Kerosines:

NOEL (*Oncorhynchus mykiss*): 0.098 mg/L, 28 day (estimated using PETROTOX computer model)

NOEL (*Tetrahymena pyriformis*): 677.9 mg/L, 72 h (estimated using PETROTOX computer model)

Solvent naphtha (petroleum), heavy arom.:

LL₅₀ (*Oncorhynchus mykiss*): 2-5 mg/L, 96h (WAF)

NOEL (*Oncorhynchus mykiss*): 2.0 mg/L, 96 h (WAF)

12.2 Persistence and degradability

The product components are not readily biodegradable but are considered inherently biodegradable due to degradation by microorganisms.

If released to water, the majority of kerosene will evaporate at a moderate rate but a small proportion will dissolve. Dissolved components will be either absorbed in sediments or evaporate to air. In aerobic water and sediments they will biodegrade, but in anaerobic conditions they will persist.

In air the hydrocarbon components undergo photodegradation by hydroxyl radicals with half lives in the range of 0.1 – 0.7 days.

Kerosene

12.3	Bioaccumulative potential	The product components have measured or predicted Log Kow values in the range 3 – 6 or above and therefore have potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.
12.4	Mobility in soil	<p>The product components are immiscible in water and will float on the surface of water. Higher molecular weight components may be adsorbed onto sediment. Biodegradation is expected to be negligible in water.</p> <p>Small volumes released on land will evaporate at a moderate rate, with a proportion of the product being absorbed in the upper soil layers and being subject to biodegradation. Larger volumes may penetrate into anaerobic layers in which the product will persist. The product may reach the water table on which it will form a floating layer and move along with the groundwater flow. In this case the more soluble components, such as aromatics, will cause groundwater contamination.</p>
12.5	Results of PBT and vPvB assessment	The product does not contain substances assessed to be PBT or vPvB.
12.6	Other adverse effects	None known.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

To be disposed of as hazardous waste. Disposal should be in accordance with local, state or national legislation.

Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor. Empty containers retain product residue and can be hazardous. Do not empty into drains; dispose of this material and its container in a safe way.

Suggested EU Waste Code: 13 07 03* (other fuels (including mixtures)). Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport Information

ADR

14.1	UN Number	1223
14.2	UN Proper shipping name	KEROSENE
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

ADN

14.1	UN Number	1223
14.2	UN Proper shipping name	KEROSENE
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

RID

14.1	UN Number	1223
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Kerosene

14.2	UN Proper shipping name	KEROSENE
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

IATA/ICAO

14.1	UN Number	1223
14.2	UN Proper shipping name	KEROSENE
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

IMDG

14.1	UN Number	1223
14.2	UN Proper shipping name	KEROSENE
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Marine pollutant.
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	The product is not intended to be transported in bulk.

SECTION 15: Regulatory Information

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

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006 as amended. The product has been classified in accordance with Regulation (EC) No. 1272/2008 (CLP), Directive 67/548/EEC & Directive 1999/45/EC.

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: Other Information

Full text of relevant R-phrases and/or H-statements:

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.
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Supplemental Hazard information (EU): Not applicable.

Risk phrase(s):	R10: Flammable. R38: Irritating to skin. R65: Harmful: may cause lung damage if swallowed. R67: Vapours may cause drowsiness and dizziness. R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
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Abbreviations:

CAS:	Chemical Abstracts Service;
EINECS:	European Inventory of Existing Commercial Chemical Substances
EC ₅₀ :	Effective Concentration 50%
EL ₅₀ :	Effective Loading rate 50%
LC ₅₀ :	Lethal Concentration 50%
LD ₅₀ :	Lethal Dose 50%
LL ₅₀ :	Lethal Loading rate 50%
LOEL:	Lowest Observed Effect Level
NOEL:	No Observed Effect Level
PBT:	Persistent, Bioaccumulative and Toxic.
RMM:	Risk Management Measures
UVCB:	Substance of Unknown or Variable composition, Complex reaction products or Biological materials
vPvB:	Very Persistent and Very Bioaccumulative
WAF:	Water Accommodated Fraction

References:

Supplier's Safety Data Sheets
ECHA disseminated REACH dossiers
ECHA Classification and Labelling Inventory
Approved Classification and Labelling Guide (Sixth edition)
The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009
Regulation (EC) No. 1272/2008 of the European Parliament and of the council.

Disclaimer:

This safety data sheet contains important information to ensure the safe storage, handling and use of this product, it does not however constitute an assessment of workplace risks.

Users are advised to refer to relevant legislation, approved codes of practice and guidance available from the Health & Safety Executive (website: <http://www.hse.gov.uk>) and to the IP Codes of Practice available from the Energy Institute (website: <http://www.energyinst.org.uk>)

Further information:

The above information is based on our current knowledge of the product. The purpose of this data sheet is to describe the product in terms of its safety and environmental requirements. It is the user's responsibility to satisfy themselves as to the application of this information and/or recommendations for their own use.

Version history:

Version:	7.1
Issue date:	10/09/2014
Previous Version:	7.0
Issue date of previous version:	31/10/2013
Sections changed from previous version:	1

Annex to extended Safety Data Sheet (eSDS)

1. Manufacture of substance – Industrial

Section 1: Exposure scenario	
Kerosenes	
Title	
Manufacture of substance	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	No other specific measures identified.
General exposures (open systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation)	

accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	5,400,000
Fraction of regional tonnage used locally:	0.11

Frequency and duration of use

Continuous release.

Emission days (days/year):	300
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Environmental factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.0003
Release fraction to soil from process (initial release prior to RMM)	0.0001

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites, thus conservative process release estimated 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. 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 (%):	≥ 97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 56.1

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils.

Sludge should be incinerated, contained or reclaimed.

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.7
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	2,000,000
Assumed domestic sewage treatment plant flow (m ³ /d):	10,000

Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated.

Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated.

Section 3: Exposure Estimation

3.1 Health

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

3.2 Environment

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

Section 4: Guidance to check the compliance with the exposure scenario

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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should

ensure that risks are managed to at least equivalent levels.

4.2 Environment

Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf>). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in the PETRORISK file 'Site Specific Production' Worksheet.

2. Use of substance as an intermediate – Industrial

Section 1: Exposure scenario Kerosenes

Title

Use as an intermediate

Use Descriptor

Sector(s) of use: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
SU 8: Manufacture of bulk, large scale chemicals (including petroleum products).
SU 9: Manufacture of fine chemicals.

Process Category(ies): PROC 1: Use in closed process, no likelihood of exposure.
PROC 2: Use in closed, continuous process with occasional controlled exposure.
PROC 3: Use in closed batch process (synthesis or formulation).
PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities.
PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities.
PROC 15: Use as laboratory reagent.

Environmental Release Category(ies): ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category: ESVOC SpERC 6.1a.v1

Processes, tasks, activities covered

Use of the substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General exposures (closed systems):	No other specific measures identified.
General exposures (open systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	180,000
Fraction of regional tonnage used locally:	0.083
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.0003
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 81.4
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	180,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	

Section 3: Exposure Estimation
3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.
Section 4: Guidance to check the compliance with the exposure scenario
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).

3. Distribution of substance – Industrial

Section 1: Exposure scenario	
Kerosenes	
Title	
Distribution of the substance	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 2: Formulation of preparations. ERC 3: Formulation in materials. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles. ERC 5: Industrial use resulting in inclusion into or onto a matrix. ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates). ERC 6b: Industrial use of reactive processing aids. ERC 6c: Industrial use of monomers for manufacture of thermoplastics. ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers. ERC 7: Industrial use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Loading (including marine vessel/barge, road/rail car and IBC loading), and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.	

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	No other specific measures identified.
General exposures (open systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.
Drum and small package filling:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.

Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	5,400,000
Fraction of regional tonnage used locally:	0.002

Frequency and duration of use

Continuous release.

Emission days (days/year):	300
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Environmental factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites, thus conservative process release estimated 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.

Treat air emission to provide a typical removal efficiency of (%):	90
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Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	2,600,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

4. Formulation and (Re)packing of substance – Industrial

Section 1: Exposure scenario Kerosenes	
Title	
Formulation and (Re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities.

	PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 14: Production of preparations or articles by tableting, compression, extrusion, palletisation. PROC 15: Use as laboratory reagent.	
Environmental Release Category(ies):	ERC 2: Formulation of preparations.	
Specific Environmental Release Category:	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, material transfers, mixing, tableting, compression, palletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.		
Section 2: Operation conditions and risk management measures		
2.1 Control of worker exposure		
Product Characteristics		
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.	
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).	
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).	
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.	
Contributing Scenarios		
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions	
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.	
General exposures (closed systems):	No other specific measures identified.	
General exposures (open systems):	No other specific measures identified.	
Bulk transfers:	No other specific measures identified.	
Process sampling:	No other specific measures identified.	
Laboratory activities:	No other specific measures identified.	
Mixing operations (open systems):	No other specific measures identified.	
Manual transfer/pouring from containers:	No other specific measures identified.	
Drum/batch transfers:	No other specific measures identified.	
Production or preparation or articles by tableting, compression, extrusion or palletisation.	No other specific measures identified.	
Drum and small package filling:	No other specific measures identified.	
Equipment cleaning and maintenance:	No other specific measures identified.	
Bulk product storage:	No other specific measures identified.	
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.		
2.2 Control of Environmental Exposure		
Product Characteristics		
Substance is a complex UVCB. Predominantly hydrophobic.		
Amounts Used		
Fraction of EU tonnage used in region:	0.1	
Regional use tonnage (tonnes/year):	5,200,000	

Fraction of regional tonnage used locally:	0.0058
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.0002
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
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 (%):	≥ 86.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	260,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

5. Use of substance in metal working fluids/rolling oils – Industrial

Section 1: Exposure scenario Kerosenes	
Title	
Use in metal working fluids/rolling oils	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	<p>PROC 1: Use in closed process, no likelihood of exposure.</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure.</p> <p>PROC 3: Use in closed batch process (synthesis or formulation).</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).</p> <p>PROC 7: Industrial spraying.</p> <p>PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC 10: Roller application or brushing.</p> <p>PROC 13: Treatment of articles by dipping and pouring.</p> <p>PROC 17: Lubrication at high energy conditions and in partly open process.</p>
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 4.7a.v1
Processes, tasks, activities covered	
Covers the use in formulated metal working fluids (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No other specific measures identified.
General exposures (open systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.

Filling/preparation of equipment from drums or containers:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Metal machining operations:	No other specific measures identified.
Treatment by dipping and pouring:	No other specific measures identified.
Spraying:	No other specific measures identified.
Manual roller, spreader, flow application:	No other specific measures identified.
Automated metal rolling/forming:	No other specific measures identified.
Semi-automated metal rolling/forming:	No other specific measures identified.
Equipment cleaning and maintenance – dedicated facility:	No other specific measures identified.
Equipment cleaning and maintenance – non-dedicated facility:	No other specific measures identified.
Storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	550
Fraction of regional tonnage used locally:	0.18
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.02
Release fraction to wastewater from process (initial release prior to RMM)	0.00003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	490,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.
Section 3: Exposure Estimation
3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.
Section 4: Guidance to check the compliance with the exposure scenario
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).

6. Use of substance in metal working fluids/rolling oils – Professional

Section 1: Exposure scenario	
Kerosenes	
Title	
Use in metal working fluids/rolling oils	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 10: Roller application or brushing. PROC 11: Non-industrial spraying. PROC 13: Treatment of articles by dipping and pouring. PROC 17: Lubrication at high energy conditions and in partly open process.
Environmental Release Category(ies):	ERC 8a: Wide dispersive indoor use of processing aids in open systems. ERC 8b: Wide dispersive indoor use of reactive substances in open systems
Specific Environmental Release Category:	ESVOC SpERC 8.7c.v1
Processes, tasks, activities covered	
Covers the use in formulated metal working fluids (MWFs) including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/reject articles and disposal of waste oils.	

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
General exposures (closed systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Filling/preparation of equipment from drums or containers – dedicated facility:	No other specific measures identified.
Filling/preparation of equipment from drums or containers – non-dedicated facility:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Metal machining operations:	No other specific measures identified.
Manual roller, spreader, flow application:	No other specific measures identified.
Spraying:	No other specific measures identified.
Equipment cleaning and maintenance – dedicated facility:	No other specific measures identified.
Equipment cleaning and maintenance – non-dedicated facility:	No other specific measures identified.
Treatment by dipping and pouring:	No other specific measures identified.
Storage:	No other specific measures identified.

Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	550
Fraction of regional tonnage used locally:	0.0005

Frequency and duration of use

Continuous release.

Emission days (days/year):	365
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Environmental factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.15
Release fraction to wastewater from process (initial release prior to RMM)	0.05
Release fraction to soil from process (initial release prior to RMM)	0.05
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	90
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

7. Use of substance as release agents or binders – Industrial

Section 1: Exposure scenario	
Kerosenes	
Title	
Use as release agents or binders	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure.

	PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 7: Industrial spraying. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 13: Treatment of articles by dipping and pouring. PROC 14: Production of preparations or articles by tableting, compression, extrusion, palletisation.	
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.	
Specific Environmental Release Category:	ESVOC SpERC 4.10a.v1	
Processes, tasks, activities covered		
Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting and handling of waste.		
Section 2: Operation conditions and risk management measures		
2.1 Control of worker exposure		
Product Characteristics		
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.	
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).	
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).	
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.	
Contributing Scenarios		
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions	
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.	
Bulk transfers:	No other specific measures identified.	
Drum/batch transfers:	No other specific measures identified.	
Mixing operations (closed systems):	No other specific measures identified.	
Mixing operations (open systems):	No other specific measures identified.	
Mould forming:	No other specific measures identified.	
Casting operations:	No other specific measures identified.	
Machine spraying:	No other specific measures identified.	
Manual spraying:	No other specific measures identified.	
Manual rolling, brushing:	No other specific measures identified.	
Dipping, immersion and pouring:	No other specific measures identified.	
Bulk product storage:	No other specific measures identified.	
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.		

2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	800
Fraction of regional tonnage used locally:	1
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0
Release fraction to wastewater from process (initial release prior to RMM)	0.000003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	4,100,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	

4.2 Environment

Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf>).

8. Use of substance as release agents or binders – Professional

Section 1: Exposure scenario Kerosenes

Title

Use as release agents or binders

Use Descriptor

Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 11: Non-industrial spraying. PROC 14: Production of preparations or articles by tableting, compression, extrusion, palletisation.
Environmental Release Category(ies):	ERC 8a: Wide dispersive indoor use of processing aids in open systems. ERC 8d: Wide dispersive outdoor use of processing aids in open systems.
Specific Environmental Release Category:	ESVOC SpERC 8.10b.v1

Processes, tasks, activities covered

Covers the use as binders and release agents including material transfers, mixing, application by spraying and brushing and handling of waste.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol

	release, e.g. spraying.
Bulk transfers:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Mixing operations (closed systems):	No other specific measures identified.
Mixing operations (open systems):	No other specific measures identified.
Mould forming:	No other specific measures identified.
Casting operations:	No other specific measures identified.
Machine spraying:	No other specific measures identified.
Manual spraying:	No other specific measures identified.
Rolling, brushing:	No other specific measures identified.
Dipping, immersion and pouring:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	800
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to RMM)	0.025
Release fraction to soil from process (initial release prior to RMM)	0.025
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMS (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	130
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation

3.1 Health

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

3.2 Environment

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

Section 4: Guidance to check the compliance with the exposure scenario

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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

4.2 Environment

Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf>).

9. Use of substance as a fuel – Industrial

Section 1: Exposure scenario Kerosenes

Title

Use as a fuel

Use Descriptor

Sector(s) of use: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.

Process Category(ies): PROC 1: Use in closed process, no likelihood of exposure.
PROC 2: Use in closed, continuous process with occasional controlled exposure.
PROC 3: Use in closed batch process (synthesis or formulation).
PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.

Environmental Release Category(ies): ERC 7: Industrial use of substances in closed systems.

Specific Environmental Release Category: 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.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product: Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.

Concentration of substance in product: Covers percentages of substance in product up to 100% (unless stated otherwise).

Frequency and duration of use: Covers daily exposures of up to 8 hours (unless stated otherwise).

Other operational conditions affecting exposure: Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	No other specific measures identified.
Use as a fuel (closed systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	550,000
Fraction of regional tonnage used locally:	1
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
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
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
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 (%):	≥ 84.6
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	5,300,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000

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.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

10. Use of substance as a fuel – Professional

Section 1: Exposure scenario	
Kerosenes	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	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.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).

Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	No other specific measures identified.
Use as a fuel (closed systems):	No other specific measures identified.
Bulk transfers:	No other specific measures identified.
Transfer/pouring from containers:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	4,400,000
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
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
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated 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.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.7

Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	690,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
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.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
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 (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

11. Use of substance as a fuel – Consumer

Section 1: Exposure scenario	
Kerosenes	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 21: Consumer uses: Private households (= general public = consumers).
Product Category(ies):	PC 13: Fuels.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses of liquid fuels.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: 0.5 – 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Amounts used:	For each use event, covers use amounts of up to 50,000 g. Covers skin contact area of up to 420 cm ² .
Frequency and duration of use:	Covers use up to 0.143 times per day (i.e. one use every 7 days). Covers exposure of up to 2 hours per use event.

Other operational conditions affecting exposure:	Covers use at ambient temperature. Covers use in room size of 20 m ³ . Covers use under typical household ventilation.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
Liquid: Automotive refuelling	Covers concentrations of up to 100%. Covers use up to 52 days/year. Covers use up to 1 time a day. Covers skin contact area up to 210 cm ² . For each use event, covers use amounts up to 50,000 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 0.05 hours (3 min). No specific risk management measures identified beyond those operational conditions stated.
Liquid: Home space heater fuel	Covers concentrations of up to 100%. Covers use up to 365 days/year. Covers use up to 1 time a day. Covers skin contact area up to 210 cm ² . For each use event, covers use amounts up to 1,500 g. Covers use under typical household ventilation. Covers use in room size of 20 m ³ . Covers exposure of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - Use	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. For each use event, covers use amounts up to 1,000 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 2 hours. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - refuelling	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. Covers skin contact area up to 420 cm ² . For each use event, covers use amounts up to 1,000 g. Covers use in a one car garage (34 m ³) under typical ventilation. Covers use in room size of 34 m ³ . Covers exposure of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.
Kerosene exhibits irritation to the skin and is classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	180,000
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10

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
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Conditions and measures related to municipal sewage treatment plant	
Risk from environmental exposure is driven by freshwater.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	31,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
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.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate consumer exposures consistent with the contact of ECETOC report #107 and Chapter R15 of the IR & CSA TGD. Where exposure determinants differ to these sources they are indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Users are advised to consider national Occupational Exposure Limits (OELs) or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or 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://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	