Kerosine (petroleum)

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

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

1.1 Product identifier
Commercial Product Name: Kerosene
Chemical name of the substance: Kerosine (petroleum)
EC No: 232-366-4
CAS No: 8008-20-6
REACH Registration Number: 01-2119485517-27-0140
Synonyms: Kerosine

1.2 Relevant identified uses of the substance or mixture and uses advised against
Specific use(s): Fuel
Further information: see exposure scenarios attached to this safety data sheet.

Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet
Company: Mabanaft Ltd
20th Floor, Portland House
Bressenden Place
SW1E 5BH-London
UNITED KINGDOM

Tel.: +44 (0)20 7802 3300
Fax: +44 (0)20 7931 8353
E-mail address: operations@mabanaft.co.uk

1.4 Emergency telephone number
OAMPS 24/7 Emergency Number: +44 (0)844 560 1124

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
2.1.1 Classification according to Regulation (EU) 1272/2008
The product is classified as hazardous in accordance with Regulation (EC) No. 1272/2008.
Flam. Liq. 3; H226
Skin Irrit. 2; H315
Asp. Tox. 1; H304
Aquatic Chronic 2; H411
STOT SE 3; H336
Full text of H-phrases: see section 16

2.1.2 Classification according to EU Directives 67/548/EEC or 1999/45/EC
The product is classified as dangerous in accordance with Directive 67/548/EEC.
Xn; R65
Xi; R38
N; R51/53
R10
Full text of R-phrases: see section 16
2.2 Label elements

2.2.1. Labelling according to Regulation (EU) 1272/2008

CLP pictograms

GHS02  GHS08  GHS07  GHS09

Signal word: Danger

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

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

2.2.2. Labelling according to Directives (67/548 - 1999/45)
Not relevant

2.3 Other hazards

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

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Directive 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosine (petroleum)</td>
<td>(CAS No.) 8008-20-6</td>
<td>100</td>
<td>Xn; R65</td>
</tr>
<tr>
<td></td>
<td>(EC No) 232-366-4</td>
<td></td>
<td>Xi; R38</td>
</tr>
<tr>
<td></td>
<td>(EC Index) 649-404-00-4</td>
<td></td>
<td>N; R51/53</td>
</tr>
<tr>
<td></td>
<td>(REACH-no) 01-2119485517-27-0140</td>
<td></td>
<td>R10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosine (petroleum)</td>
<td>(CAS No.) 8008-20-6</td>
<td>100</td>
<td>Flam. Liq. 3, H226</td>
</tr>
<tr>
<td></td>
<td>(EC No) 232-366-4</td>
<td></td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td>(EC Index) 649-404-00-4</td>
<td></td>
<td>STOT SE 3, H336</td>
</tr>
<tr>
<td></td>
<td>(REACH-no) 01-2119485517-27-0140</td>
<td></td>
<td>Asp. Tox. 1, H304</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 2, H411</td>
</tr>
</tbody>
</table>

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

3.2 Mixtures

Not applicable
SECTION 4: First aid measures

4.1 Description of first aid measures

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

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

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

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

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

4.2 Most important symptoms and effects, both acute and delayed

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

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

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

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

4.3 Indication of any immediate medical attention and special treatment needed

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

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

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

5.2 Special hazards arising from the substance or mixture

Fire hazard: Flammable

Specific hazards: Vapours may form explosive mixture with air. Vapours are heavier than air and may spread along floors. Flash back possible over considerable distance. The pressure in sealed containers can increase under the influence of heat. Possible decomposition products are: Carbon oxides, hydrogen sulphide (H2S). Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

5.3 Advice for firefighters

Special protective equipment for firefighters In the event of fire, wear self-contained breathing apparatus. In the event of fire, cool tanks with water spray. Evacuate personnel to safe areas. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
SECTION 6: Accidental release measures

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

6.2 Environmental precautions
Do not flush into surface water or sanitary sewer system.

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

6.4 Reference to other sections
See also section 8. See also section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Handling: Ensure adequate ventilation. Wear personal protective equipment. See also section 8. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Take precautionary measures against static discharges. Ensure all equipment is electrically grounded before beginning transfer operations. Keep away from open flames, hot surfaces and sources of ignition. Take any precaution to avoid mixing with incompatible materials. See also section 10. Take care to avoid waste and spillage when weighing, loading and mixing the product. Do not let product enter drains. Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use. Keep working clothes separately. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities
Storage: Keep tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Do not store near or with any of the incompatible materials listed in section 10. Packaging material: Store in original container.

7.3 Specific end use(s)
see attached exposure scenario.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Exposure limit(s)
Component: Kerosine (petroleum) (8008-20-6)
TLV-TWA (mg/m³): 200 (BE); 100 (PL); 250 (SE - Jet Fuel)
8.2 Exposure controls

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

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

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

**Eye protection:** Safety glasses (EN166)

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

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

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

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

SECTION 9: Physical and chemical properties

9.1 **Information on basic physical and chemical properties**

**Appearance:** liquid

**Colour:** clear

**Odour:** petroleum hydrocarbon odour

**Odour Threshold:** 0,5 mg/m³ literature value

** Odour Threshold:** No data available

**pH:** NA: Justification for data waiving -> UVCB

**Melting point/range:** No data available

**Boiling point/boiling range:** 90 - 300 °C

**Flash point:** > 38 °C (CC PM)

**Evaporation rate:** < 1 Relative evaporation rate (butylacetate=1)
Kerosine (petroleum)

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

Flammability (solid, gas): not applicable
Explosion limits: 0,7 - 5 vol % (Inchem)
Vapour pressure: 1 - 21 kPa @37.8°C
Vapour density: > 1 Relative vapour density at 20 °C (air=1)
Relative density: 0,775 - 0,84 g/cm³ @ 15°C
Water solubility: NA: Justification for data waiving -> UVCB
Solubility in other solvents: Hydrocarbons
Partition coefficient: n-octanol/water: NA: UVCB-> Justification for data waiving
Autoignition temperature: > 220 °C
Decomposition temperature: > 90 °C
Viscosity: 2,9 - 12 cSt @ -20°C
1 - 2,5 cSt @40°C
Explosive properties: NA: Justification for data waiving,-> other justification
Oxidizing properties: NA: Justification for data waiving -> other justification

9.2 Other information
Other data: Not applicable.

SECTION 10: Stability and reactivity

10.1 Reactivity
Flammable liquid, See also section 10.5

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Vapours may form explosive mixtures with air.

10.4 Conditions to avoid
Heat, flames and sparks. See also section 7 Handling and storage.

10.5 Incompatible materials
Oxidizing agents See also section 7 Handling and storage.

10.6 Hazardous decomposition products
Burning produces noxious and toxic fumes. Possible decomposition products are: Carbon oxides, hydrogen sulphide (H2S).

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity: Not classified (Based on available data, the classification criteria are not met.)
LD50/oral/rat = > 5000 mg/kg (OECD 401)
LD50/dermal/rabbit = > 2000 mg/kg (OECD 434)
LC50/inhalation/4h/rat = > 5200 mg/m³ (OECD 403)

Skin corrosion/irritation: Causes skin irritation.
Kerosine (petroleum)

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

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

Respiratory/skin sensitisation: Not classified (Based on available data, the classification criteria are not met.)
OECD Test Guideline 406

Germ cell mutagenicity: Not classified (Based on available data, the classification criteria are not met.)
Test Method OECD 475, 478, 479.

Carcinogenicity: Not classified (Based on available data, the classification criteria are not met.)
OECD Test Guideline 451

Reproductive toxicity: Not classified (Based on available data, the classification criteria are not met.)
OECD 421.
OECD 422.
NOAEL (dermal, rat/rabbit) : > 494 mg/kg bw/d
NOAEL (inhalation, rat, vapour) : > 1000 mg/m³
(NOAECh)
NOAEL (oral, rat) : > 3000 mg/kg bw/d

Specific target organ toxicity (single exposure): May cause drowsiness or dizziness.

Specific target organ toxicity (repeated exposure): Not classified (Based on available data, the classification criteria are not met.)
NOAEL (dermal, rat/rabbit) : > 400 mg/kg bw/d (28d)
NOAEL (inhalation, rat, dust/mist/fume, 90 days) : 1000 mg/m³
NOAEL (oral, rat, 90 days) : 750 mg/kg/d
NOAEL (inhalation, rat, vapour, 90 days) : >= 24 mg/m³ (28d)

Aspiration hazard: May be fatal if swallowed and enters airways.

Further information: Symptoms related to the physical, chemical and toxicological characteristics See section 4.2.

SECTION 12: Ecological information

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

12.3 Bioaccumulative potential
Substance is complex UVCB
Not applicable

12.4 Mobility in soil
Not applicable: UVCB

12.5 Results of PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Waste from residues / unused products: Handle with care. See also section 7 Handling and storage
Where possible recycling is preferred to disposal or incineration. Collect and dispose of waste product
at an authorised disposal facility. Dispose of in accordance with local regulations.
Contaminated packaging: Do not use pressure to empty drums. Do not burn, or use a cutting torch
on, the empty drum. Do not puncture or incinerate. Empty containers should be
transported/delivered using a registered waste carrier to local recyclers for disposal. Dispose of in
accordance with local regulations.
Additional ecological information: Do not flush into surface water or sanitary sewer system.
List of suggested waste codes/waste designations in accordance with the EWC:
Classified as hazardous waste according to European Union regulations. Waste codes should be assigned by the
user based on the application for which the product was used. The following Waste Codes are only
suggestions: 13 07 03* - other fuels (including mixtures) 15 01 10* - packaging containing residues of
or contaminated by dangerous substances.

SECTION 14: Transport information

14.1 UN number
UN-No.: 1863

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

14.3 Transport hazard class(es)
14.3.1. Overland transport (ADR/RID)
Class: 3 - Flammable liquid
Hazard identification number (Kemler No.): 30
Classification code (ADR): F1
ADR/RID-Labels: 3 - Flammable liquid
14.3.2. Inland waterway transport (ADN)
ADN: Hazards : 3+N2
Class (ADN): 3

14.3.3. Transport by sea (IMDG)
Class: 3 - Flammable liquids

14.3.4. Air transport (IATA)
Class: 3 - Flammable liquids

14.4 Packing group
Packing group: III

14.5 Environmental hazards
Environmental hazards:

Other information: ADN : N2.

14.6 Special precautions for user
no data available.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Code: IBC: no data available.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations
Restrictions on use: Annex XVII: 3&40
This product contains an ingredient according to the candidate list of Annex XIV of the REACH Regulation 1907/2006/EC.:
Authorisations Not applicable

15.1.2. National regulations
WGK: 2
German storage class (LGK): LGK 3 - Flammable liquid materials (Flashpoint < 55 °C)
Technische Regeln für Gefahrstoffe (TRGS): TRGS 900
Risk classification according to VbF: A II - Liquids with a flashpoint between 21°C and 55°C
ABM: 6 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. (A)
15.2 Chemical safety assessment

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

SECTION 16: Other information

Issuing date: 15/March/2016
Revision nr: 2
Supersedes: 14/January/2013

Safety datasheet sections which have been updated:

Full text of R-, H- and EUH-phrases:
1

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

Sources of key data used to compile the Safety Data Sheet

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

Further information

Not applicable

Abbreviations and acronyms

ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin
ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC
IATA = International Air Transport Association
IMDG = International Maritime Dangerous Goods Code
LEL = Lower Explosive Limit/Lower Explosion Limit
UEL = Upper Explosion Limit/Upper Explosive Limit
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)
PNEC= Predicted No Effect Concentration
DNEL = Derived No Effect Level
NA = not applicable
Kerosine (petroleum)
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

NOAEL = No observed adverse effect level
DMEL = Derived minimal effect level
NOEL = No-observed-effect level
UVCB = Substance of unknown or variable composition, complex reaction products or biological material (UVCB)
EWC = European Waste Catalogue

Annex: Exposure scenarios

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

Issuing date: 15/March/2016
Revision nr: 2
Supersedes: 14/January/2013
### Exposure scenario

#### 1. Title: Distribution of substance

| Use descriptors | PROC1, PROC2, PROC3, PROC4, PROC8A, PROC8B, PROC9, PROC15 SU3 ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOC SPERC 1.1.b.v1 |
| Processes, tasks activities covered | Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities. Industrial use |
| Assessment method | ECETOC TRA The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model. |

#### 2. Operational conditions and risk management measures

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

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

#### Product characteristics

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

#### Operational conditions

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

#### Risk management measures

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

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

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

### Product characteristics

Other product characteristics | Substance is complex UVCB, Predominantly hydrophobic
--- | ---

### Operational conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction of EU tonnage used in region:</td>
<td>0,1</td>
</tr>
<tr>
<td>Regional use tonnage (tons/year):</td>
<td>5400000</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally:</td>
<td>0,002</td>
</tr>
<tr>
<td>Annual site tonnage (tons/year):</td>
<td>11000</td>
</tr>
<tr>
<td>Maximum daily site tonnage (kg/day):</td>
<td>36000</td>
</tr>
<tr>
<td>Number of emission days per year</td>
<td>300</td>
</tr>
<tr>
<td>Local freshwater dilution factor:</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor:</td>
<td>100</td>
</tr>
<tr>
<td>Release fraction to air from process (initial release prior to RMM):</td>
<td>0,001 %</td>
</tr>
<tr>
<td>Release fraction to wastewater from process (initial release prior to RMM):</td>
<td>0,00001 %</td>
</tr>
<tr>
<td>Release fraction to soil from process (initial release prior to RMM):</td>
<td>0,00001 %</td>
</tr>
</tbody>
</table>
Risk management measures

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

3. Exposure estimation and reference to its source

3.1. Health

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

3.2. Environment

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

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

4.1. Health

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

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

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

| Use descriptors | PROC1, PROC2, PROC3, PROC4, PROC5, PROC8A, PROC8B, PROC9, PROC14, PROC15, SU3, SU10, ERC2, ESVOC SPERC 2.2.v1 |
| Processes, tasks activities covered | Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities. Industrial use |
| Assessment method | ECETOC TRA |

2. Operational conditions and risk management measures

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

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

Product characteristics

- Physical form: Liquid
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100% (unless stated differently).
- Vapour pressure: Liquid, vapour pressure 0.5 - 10 kPa at STP.

Operational conditions

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

Risk management measures

- Other risk management measures: General measures (skin irritants)
  - Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
### Other risk management measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Specific measures identified?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General exposures (closed systems)</strong></td>
<td>CS16 - General exposures (open systems)</td>
<td>No other specific measures identified.</td>
</tr>
<tr>
<td><strong>CS2 - Process sampling</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS36 - Laboratory activities</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS14 - Bulk transfers</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS30 - Mixing operations (open systems)</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS34 - Manual CS22 - Transfer from/pouring from containers</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS8 - Drum/batch transfers</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS100 - Production or preparation or articles by tabletting, compression, extrusion or pelletisation</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS6 - Drum and small package filling</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS39 - Equipment cleaning and maintenance</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
<tr>
<td><strong>CS85 - Bulk product storage</strong></td>
<td>No other specific measures identified.</td>
<td></td>
</tr>
</tbody>
</table>

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

**ERC2**: Formulation of preparations

**Product characteristics**

Other product characteristics: Substance is complex UVCB, Predominantly hydrophobic

**Operational conditions**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction of EU tonnage used in region</td>
<td>0,1</td>
</tr>
<tr>
<td>Regional use tonnage (tons/year)</td>
<td>5200000</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally</td>
<td>0,0058</td>
</tr>
<tr>
<td>Annual site tonnage (tons/year)</td>
<td>30000</td>
</tr>
<tr>
<td>Maximum daily site tonnage (kg/day)</td>
<td>100000</td>
</tr>
<tr>
<td>Continuous use/release</td>
<td></td>
</tr>
<tr>
<td>Number of emission days per year</td>
<td>300</td>
</tr>
<tr>
<td>Local freshwater dilution factor</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
<tr>
<td>Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements)</td>
<td>0.01%</td>
</tr>
</tbody>
</table>
### Other given operational conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Release fraction to wastewater from process (initial release prior to RMM):</th>
<th>0.0002 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release fraction to soil from process (initial release prior to RMM):</td>
<td>0.0001 %</td>
</tr>
</tbody>
</table>

### Risk management measures

<table>
<thead>
<tr>
<th>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</td>
<td>Treat air emission to provide a typical removal efficiency of (%): 0</td>
</tr>
<tr>
<td>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</td>
<td>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 86,0</td>
</tr>
<tr>
<td>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</td>
<td>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0</td>
</tr>
<tr>
<td>Organizational measures to prevent/limit release from the site</td>
<td>Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.</td>
</tr>
<tr>
<td>Conditions and measures related to municipal sewage treatment plant</td>
<td>Estimated substance removal from wastewater via on-site sewage treatment (%): 94,7 %</td>
</tr>
<tr>
<td>Conditions and measures related to municipal sewage treatment plant</td>
<td>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94,7 %</td>
</tr>
<tr>
<td>Conditions and measures related to municipal sewage treatment plant</td>
<td>Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 260000</td>
</tr>
<tr>
<td>Conditions and measures related to municipal sewage treatment plant</td>
<td>Assumed domestic sewage treatment plant flow (m³/d): 2000</td>
</tr>
<tr>
<td>Conditions and measures related to external treatment of waste for disposal</td>
<td>External treatment and disposal of waste should comply with applicable local and/or national regulations.</td>
</tr>
</tbody>
</table>

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

#### 3.1. Health

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

#### 3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

### 4.1. Health

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

### 4.2. Environment

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

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

| Use descriptors | PROC1, PROC2, PROC3, PROC8A, PROC8B, PROC16  
|                 | SU3  
|                 | ERC7  
|                 | ESVOC SPERC 7.12a.v1 |

| Processes, tasks activities covered | Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. |

| Assessment method | ECETOC TRA  
|                  | The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model. |

#### 2. Operational conditions and risk management measures

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

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

### Product characteristics

<table>
<thead>
<tr>
<th>Physical form</th>
<th>Liquid</th>
</tr>
</thead>
</table>

| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |

| Vapour pressure | Liquid, vapour pressure 0,5 - 10 kPa at STP. |

### Operational conditions

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

### Risk management measures

<table>
<thead>
<tr>
<th>Other risk management measures</th>
<th>General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other risk management measures</th>
<th>General exposures (closed systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No other specific measures identified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other risk management measures</th>
<th>Use as a fuel CS107 - (closed systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No other specific measures identified.</td>
</tr>
</tbody>
</table>
### Other risk management measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS14 - Bulk transfers</td>
<td>No other specific measures identified.</td>
</tr>
<tr>
<td>CS8 - Drum/batch transfers</td>
<td>No other specific measures identified.</td>
</tr>
<tr>
<td>CS39 - Equipment cleaning and maintenance</td>
<td>No other specific measures identified.</td>
</tr>
<tr>
<td>CS85 - Bulk product storage</td>
<td>No other specific measures identified.</td>
</tr>
</tbody>
</table>

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

**ERC7:** Industrial use of substances in closed systems

**Product characteristics**

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

**Operational conditions**

<table>
<thead>
<tr>
<th>Amount used</th>
<th>Fraction of EU tonnage used in region: 0,1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional use tonnage (tons/year):</td>
<td>550000</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally:</td>
<td>1</td>
</tr>
<tr>
<td>Annual site tonnage (tons/year):</td>
<td>550000</td>
</tr>
<tr>
<td>Maximum daily site tonnage (kg/day):</td>
<td>1800000</td>
</tr>
<tr>
<td>Continuous use/release.</td>
<td></td>
</tr>
<tr>
<td>Number of emission days per year</td>
<td>300</td>
</tr>
<tr>
<td>Local freshwater dilution factor:</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor:</td>
<td>100</td>
</tr>
<tr>
<td>Release fraction to air from process (initial release prior to RMM):</td>
<td>0,005 %</td>
</tr>
<tr>
<td>Release fraction to wastewater from process (initial release prior to RMM):</td>
<td>0,00001 %</td>
</tr>
<tr>
<td>Release fraction to soil from process (initial release prior to RMM):</td>
<td>0 %</td>
</tr>
</tbody>
</table>

**Risk management measures**

<table>
<thead>
<tr>
<th>Technical conditions and measures at process level to prevent release</th>
<th>Common practices vary across sites thus conservative process release estimates used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.</td>
<td><strong>Disclaimer:</strong> The statements provided are based on the information available and the exact environmental conditions and regulations may vary. Compliance with local regulations and guidelines is crucial.</td>
</tr>
<tr>
<td>Treat air emission to provide a typical removal efficiency of (%)</td>
<td>95</td>
</tr>
<tr>
<td>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%)</td>
<td>84,6</td>
</tr>
<tr>
<td>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%)</td>
<td>0</td>
</tr>
</tbody>
</table>
discharges, air emissions and releases to soil

Organizational measures to prevent/limit release from the site

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

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via on-site sewage treatment (%): 94.7%

Conditions and measures related to municipal sewage treatment plant

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7%

Conditions and measures related to municipal sewage treatment plant

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 5300000

Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow (m³/d): 2000

Conditions and measures related to external treatment of waste for disposal

Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

3. Exposure estimation and reference to its source

3.1. Health

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

3.2. Environment

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

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

4.1. Health

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

4.2. Environment

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

1. Title: Use as a fuel in professional settings

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

2. Operational conditions and risk management measures

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

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

Product characteristics

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

Operational conditions

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

Risk management measures

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

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

<table>
<thead>
<tr>
<th>Other risk management measures</th>
<th>CS22 - Transfer from/pouring from containers</th>
<th>No other specific measures identified.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other risk management measures</td>
<td>CS39 - Equipment cleaning and maintenance</td>
<td>No other specific measures identified.</td>
</tr>
<tr>
<td>Other risk management measures</td>
<td>CS85 - Bulk product storage</td>
<td>No other specific measures identified.</td>
</tr>
</tbody>
</table>

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

ERC9a: Wide dispersive indoor use of substances in closed systems
ERC9b: Wide dispersive outdoor use of substances in closed systems

### Product characteristics

**Other product characteristics**

- Substance is complex UVCB, Predominantly hydrophobic

### Operational conditions

<table>
<thead>
<tr>
<th>Amount used</th>
<th>Fraction of EU tonnage used in region:</th>
<th>0,1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Regional use tonnage (tons/year):</td>
<td>4400000</td>
</tr>
<tr>
<td>Amount used</td>
<td>Fraction of Regional tonnage used locally:</td>
<td>0,0005</td>
</tr>
<tr>
<td>Amount used</td>
<td>Annual site tonnage (tons/year):</td>
<td>2200</td>
</tr>
<tr>
<td>Amount used</td>
<td>Maximum daily site tonnage (kg/day):</td>
<td>6100</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td>Continuous use/release.</td>
<td></td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td>Number of emission days per year</td>
<td>365</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental factors not influenced by risk management</th>
<th>Local freshwater dilution factor:</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental factors not influenced by risk management</td>
<td>Local marine water dilution factor:</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other given operational conditions affecting environmental exposure</th>
<th>Release fraction to air from wide dispersive use (regional only):</th>
<th>0,001 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other given operational conditions affecting environmental exposure</td>
<td>Release fraction to wastewater from wide dispersive use:</td>
<td>0,00001 %</td>
</tr>
<tr>
<td>Other given operational conditions affecting environmental exposure</td>
<td>Release fraction to soil from wide dispersive use (regional only):</td>
<td>0,00001 %</td>
</tr>
</tbody>
</table>

### Risk management measures

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ( \geq ) (%):</td>
<td>0</td>
</tr>
</tbody>
</table>

### Organizational measures to prevent/limit release from the site

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

### Conditions and measures related to municipal sewage treatment plant

- Estimated substance removal from wastewater via on-site sewage treatment (%): 94.7%
- 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): 690000
- Assumed domestic sewage treatment plant flow (m³/d): 2000
- Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

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

- Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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

#### 3.1. Health

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

#### 3.2. Environment

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

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

#### 4.1. Health

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

#### 4.2. Environment

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

### 1. Title: Use as a fuel

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

### 2. Operational conditions and risk management measures

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

**PC13:Fuels**

**Physical form**
- Liquid

**Concentration of the Substance in Mixture/Article**
- Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Vapour pressure**
- Liquid, vapour pressure 0.5 - 10 kPa at STP.

**Operational conditions**

| Amount used | unless stated differently. Covers use up to (g) | 50000  
| Amount used | Covers skin contact area up to (cm²) | 420  
| Frequency and duration of use | unless stated differently. Covers use up to | 0.143  
| Frequency and duration of use | Covers exposure up to | 2  
| Other given operational conditions affecting consumers exposure | Covers use at ambient temperatures. Unless otherwise stated  
| Other given operational conditions affecting consumers exposure | Covers use in room size of (m³) | 20  
| Other given operational conditions affecting consumers exposure | Covers use under typical household ventilation.  
| Other given operational conditions affecting consumers exposure | PC13 - Fuels Liquid: Automotive Refuelling  
| Other given operational conditions affecting consumers exposure | PC13 - Fuels Liquid: Home space heater fuel  
| Other given operational conditions affecting consumers exposure | PC13 - Fuels Liquid Garden Equipment - Use  
| Other given operational conditions affecting consumers exposure | PC13 - Fuels Liquid: Garden Equipment - Refuelling  

Issuing date: 15/March/2016  
Revision nr: 2  
Supersedes: 14/January/2013
### Risk management measures

<table>
<thead>
<tr>
<th>PC13 - Fuels Liquid:</th>
<th>No specific risk management measure identified beyond those operational conditions stated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive Refuelling</td>
<td></td>
</tr>
<tr>
<td>Home space heater fuel</td>
<td></td>
</tr>
<tr>
<td>Garden Equipment - Use</td>
<td></td>
</tr>
<tr>
<td>Garden Equipment - Refuelling</td>
<td></td>
</tr>
</tbody>
</table>

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

**ERC9a:** Wide dispersive indoor use of substances in closed systems

**ERC9b:** Wide dispersive outdoor use of substances in closed systems

### Product characteristics

- Substance is complex UVCB, Predominantly hydrophobic

### Operational conditions

<table>
<thead>
<tr>
<th>Amount used</th>
<th>Fraction of EU tonnage used in region:</th>
<th>0,1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional use tonnage (tons/year):</td>
<td>180000</td>
<td></td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally:</td>
<td>0,0005</td>
<td></td>
</tr>
<tr>
<td>Annual site tonnage (tons/year):</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Maximum daily site tonnage (kg/day):</td>
<td>245</td>
<td></td>
</tr>
<tr>
<td>Number of emission days per year</td>
<td>365</td>
<td></td>
</tr>
<tr>
<td>Local freshwater dilution factor:</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Local marine water dilution factor:</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Release fraction to air from wide dispersive use (regional only):</td>
<td>0,001 %</td>
<td></td>
</tr>
<tr>
<td>Release fraction to wastewater from wide dispersive use:</td>
<td>0,00001 %</td>
<td></td>
</tr>
<tr>
<td>Release fraction to soil from wide dispersive use (regional only):</td>
<td>0,00001 %</td>
<td></td>
</tr>
</tbody>
</table>

### Risk management measures

- Risk from environmental exposure is driven by freshwater.
- Estimated substance removal from wastewater via on-site sewage treatment (%): 94.7
- Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 31000
- Assumed domestic sewage treatment plant flow (m3/d): 2000
3. Exposure estimation and reference to its source

3.1. Health

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

3.2. Environment

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

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

4.1. Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

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

DISCLAIMER OF LIABILITY  The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.