

## Safety Data Sheet

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

#### 1.1 Product Identifier

**Material Name** : Diesel (ULSD/Gasoil/GO)

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

**Product Use** : Fuel for on-road diesel-powered engines. Fuel for use in off-road diesel engines, boilers, gas turbines and other combustion equipment. Please refer to Ch16 for the registered uses under REACH.

**Uses Advised Against** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.

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

**Manufacturer/Supplier** : Shell Trading International Limited  
80 Strand  
London,  
WC2R 0ZA  
United Kingdom

**Telephone** : +44 (0) 20 7546 2364

**Email Contact for  
Safety Data Sheet** : TRsds@shell.com

#### 1.4 Emergency Telephone Number

: +44 (0)151 350 4595

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### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008 (CLP)	
Hazard classes / Hazard categories	Hazard Statement

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Flammable liquids, Category 3	H226
Aspiration hazard, Category 1	H304
Acute toxicity, Category 4; Inhalation	H332
Skin corrosion/irritation, Category 2	H315
Carcinogenicity, Category 2	H351
Specific target organ toxicity - repeated exposure, Category 2; Blood.; Thymus.; Liver	H373
Hazardous to the aquatic environment - Long-term Hazard, Category 2	H411

1999/45/EC	
Hazard Characteristics	R-phrase(s)
Carcinogenic, category 3.; Xn: Harmful.; Xi: Irritant.; N: Dangerous for the environment.;	R40; R20; R38; R65; R51/53

Classification triggering components : Contains fuels, diesel.

### 2.2 Label Elements

#### Labeling according to Regulation (EC) No 1272/2008

Hazard pictograms :



Signal Words : Danger

CLP Hazard Statements : PHYSICAL HAZARDS:  
H226: Flammable liquid and vapour.

#### HEALTH HAZARDS:

H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation.

H332: Harmful if inhaled.

H351: Suspected of causing cancer.

H373: May cause damage to organs or organ systems through prolonged or repeated exposure.

#### ENVIRONMENTAL HAZARDS:

H411: Toxic to aquatic life with long lasting effects.

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### CLP Precautionary statements

- Prevention** : P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.
- Response** : P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P331: Do NOT induce vomiting.
- Disposal:** : P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

### 2.3 Other Hazards

- Health Hazards** : Limited evidence of carcinogenic effect.
- Harmful by inhalation.  
Slightly irritating to respiratory system.  
Irritating to skin. Harmful: may cause lung damage if swallowed.
- Safety Hazards** : Not classified as flammable but will burn. May ignite on surfaces at temperatures above auto-ignition temperature. Vapour in the headspace of tanks and containers may ignite and explode at temperatures exceeding auto-ignition temperature, where vapour concentrations are within the flammability range. This material is a static accumulator. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.
- Environmental Hazards** : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Other Information** : This product is intended for use in closed systems only.

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This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substance**

**Material Name** : Not applicable.

**3.2 Mixtures**

**Mixture Description** : Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v. May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present.

**Hazardous Components****Classification of components according to Regulation (EC) No 1272/2008**

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Fuels, diesel	68334-30-5	269-822-7	01-2119484664-27	50.00 - 100.00%
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	848301-67-7	481-740-5	01-0000020119-75	0.00 - 25.00%
Kerosene (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	848301-66-6	481-670-5	01-0000020121-90	0.00 - 25.00%
Kerosine (petroleum), hydrodesulphurised	64742-81-0	265-184-9	01-2119462828-25	< 30.00%
Kerosine	8008-20-6	232-366-4	01-2119485517-27	< 30.00%
Distillates (Fischer - Tropsch), heavy, C18-50 – branched, cyclic and linear	848301-69-9	Not available	01-0000020163-82	0.00 - 20.00%

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Distillates (petroleum), heavy hydrocracked	64741-76-0	265-077-7	01-2119486951-26	0.00 - 10.00%
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Chemical Name	Hazard Class & Category	Hazard Statement
Fuels, diesel	Flam. Liq., 3; Asp. Tox., 1; Acute Tox., 4; Skin Corr., 2; Carc., 2; STOT RE, 2; Aquatic Chronic, 2;	H226; H304; H332; H315; H351; H373; H411;
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	Asp. Tox., 1;	H304; EUH066;
Kerosene (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	Asp. Tox., 1; Flam. Liq., 3;	H304; H226; EUH066;
Kerosine (petroleum), hydrodesulphurised	Flam. Liq., 3; Skin Corr., 2; STOT SE, 3; Asp. Tox., 1; Aquatic Chronic, 2; Aquatic Acute, 2;	H226; H315; H336; H304; H411; H401;
Kerosine	Flam. Liq., 3; Skin Corr., 2; STOT SE, 3; Asp. Tox., 1; Aquatic Chronic, 2; Aquatic Acute, 2;	H226; H315; H336; H304; H411; H401;
Distillates (Fischer - Tropsch), heavy, C18-50 – branched, cyclic and linear	Asp. Tox., 1;	H304;
Distillates (petroleum), heavy hydrocracked	Asp. Tox., 1;	H304;

## Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EC Number	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Fuels, diesel	68334-30-5	269-822-7	01-2119484664-27	Xn, N, Xi	R20; R38; R40; R65; R51/53	50.00 - 100.00%
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	848301-67-7	481-740-5	01-0000020119-75	Xn	R65; R66	0.00 - 25.00%
Kerosene (Fischer Tropsch), Full	848301-66-6	481-670-5	01-0000020121-90	Xn	R10; R65; R66	0.00 - 25.00%

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range, C8-C16 branched and linear alkanes						
Kerosine (petroleum), hydrodesulphurised	64742-81-0	265-184-9	01-2119462828-25	Xi, Xn, N	R10; R38; R65; R51/53	< 30.00%
Kerosine	8008-20-6	232-366-4	01-2119485517-27	Xi, Xn, N	R10; R38; R65; R51/53	< 30.00%
Distillates (Fischer - Tropsch), heavy, C18-50 – branched, cyclic and linear	848301-69-9	Not available	01-0000020163-82	Xn	R65	0.00 - 20.00%
Distillates (petroleum), heavy hydrocracked	64741-76-0	265-077-7	01-2119486951-26	Xn	R65	0.00 - 10.00%

**Additional Information** : Contains Cumene, CAS# 98-82-8 Contains Naphthalene, CAS # 91-20-3.

Dyes and markers can be used to indicate tax status and prevent fraud.

Refer to Ch 16 for full text of R- and H- phrases.

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

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**SECTION 4. FIRST AID MEASURES**
**4.1 Description of First Aid Measures**

- Inhalation** : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- Skin Contact** : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment. When using high pressure

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- equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.
- Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
- Ingestion** : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing. Give nothing by mouth.
- Self-protection of the first aider** : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
- 4.2 Most important symptoms and effects, both acute and delayed** : If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure.  
Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.
- 4.3 Indication of any immediate medical attention and special treatment needed** : Treat symptomatically.

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## SECTION 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.
- 5.2 Special hazards arising from the substance or mixture** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Oxides of sulphur. Unidentified organic and inorganic compounds. Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface

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- water. Flammable vapours may be present even at temperatures below the flash point. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- 5.3 Advice for firefighters** : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).
- Additional Advice** : Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations. Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Take precautionary measures against static discharges.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** : 6.1.1 For non emergency personnel: Do not breathe fumes, vapour. Do not operate electrical equipment.
- 6.1.2 For emergency responders:  
Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.
- 6.2 Environmental Precautions** : Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- 6.3 Methods and Material for Containment and Cleaning Up** : Take precautionary measures against static discharges. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe



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disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.

- Additional Advice** : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.
- 6.4 Reference to other sections** : For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

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### SECTION 7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Prevent spillages. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Never siphon by mouth. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse.  
Maintenance and Fuelling Activities - Avoid inhalation of vapours and contact with skin.
- 7.1 Precautions for Safe Handling** : Avoid inhaling vapour and/or mists. Avoid prolonged or repeated contact with skin. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Earth all equipment. Electrostatic

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### Product Transfer

charges may be generated during pumping. Electrostatic discharge may cause fire. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. The vapour is heavier than air, spreads along the ground and distant ignition is possible.

: 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. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling. 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. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ( $\leq 1$  m/s until fill pipe submerged to twice its diameter, then  $\leq 7$  m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

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

: Drum and small container storage: Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable containers. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. The vapour is heavier than air. Beware of accumulation in pits and confined

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spaces. Keep container tightly closed and in a cool, well-ventilated place. Keep in a cool place. Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable. Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Keep in a bunded area with a sealed (low permeability) floor, to provide containment against spillage. Prevent ingress of water.

- Recommended Materials** : For containers, or container linings use mild steel, 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) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.
- Unsuitable Materials** : Some synthetic materials 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.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
- 7.3 Specific end use(s)** : Please refer to Ch16 and/or the annexes for the registered uses under REACH.  
See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).
- Additional Information** : Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication "COSHH Essentials". Ensure that all local regulations regarding handling and storage facilities are followed.

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.

#### 8.1 Control Parameters

##### Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Fuels, diesel	ACGIH	TWA(Inhalable fraction and vapor.)		100 mg/m3	as total hydrocarbons
	ACGIH	SKIN_DES(Inhalable fraction and vapor.)			Can be absorbed through the skin.as total hydrocarbons
Kerosine (petroleum), hydrodesulphurised	ACGIH	TWA(Non-aerosol.)		200 mg/m3	P: Application restricted to conditions in which there are negligible aerosol exposures.as total hydrocarbon vapor
	ACGIH	SKIN_DES(Non-aerosol.)			Can be absorbed through the skin.as total hydrocarbon vapor

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Kerosine	ACGIH	TWA(Non-aerosol.)		200 mg/m3	P: Application restricted to conditions in which there are negligible aerosol exposures.as total hydrocarbon vapor
	ACGIH	SKIN_DES(Non-aerosol.)			Can be absorbed through the skin.as total hydrocarbon vapor
Cumene	ACGIH	TWA	50 ppm		
	EH40 WEL	STEL	50 ppm	250 mg/m3	
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.
	EH40 WEL	TWA	25 ppm	125 mg/m3	

**Biological Exposure Index (BEI)**

No biological limit allocated.

**Derived No Effect Levels (DNEL/DMEL) Table**

Component	Exposure Route	Exposure Type (long/short)	Application Area	Value
Distillates (petroleum), steam-cracked, C5-12 fraction	Dermal	long term, systemic effects	Worker	23.4 mg/kg
	Inhalation	long term, systemic effects	Worker	3.25 mg/m3

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**PNEC related information** : Substance is a hydrocarbon with a complex, unknown or variable composition. Conventional methods of deriving PNECs are not appropriate and it is not possible to identify a single representative PNEC for such substances.

**Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

### 8.2 Exposure Controls General Information

: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Eye washes and showers for emergency use. Firewater monitors and deluge systems are recommended. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Do not ingest. If swallowed then seek immediate medical assistance.

### Occupational Exposure Controls

**Personal Protective Equipment** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

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- Eye Protection** : Chemical splash goggles (chemical monogoggles). If a local risk assessment deems it so, then chemical splash goggles may not be required and safety glasses may provide adequate eye protection.  
Approved to EU Standard EN166.
- Hand Protection** : Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.
- Body protection** : Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).
- Respiratory Protection** : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. All respiratory protection equipment and use must be in accordance with local regulations.  
Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

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**Thermal Hazards** : Not applicable.

### Environmental Exposure Controls

**Environmental exposure control measures** : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Information on accidental release measures are to be found in section 6.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance : Colourless to yellowish. Liquid.  
Odour : May contain a reodorant.  
Initial Boiling Point and Boiling Range : 170 - 390 °C / 338 - 734 °F  
Pour point : ≤ 6 °C / 43 °F  
Flash point : > 55 °C / 131 °F  
Upper / lower Flammability or Explosion limits : 1 - 6 %(V)  
Auto-ignition temperature : > 220 °C / 428 °F  
Vapour pressure : 1 hPa at 20 °C / 68 °F  
Density : 0.82 - 0.89 g/cm<sup>3</sup> at 15 °C / 59 °F  
n-octanol/water partition coefficient (log Pow) : 3 - 6  
Kinematic viscosity : 1.5 - 6 mm<sup>2</sup>/s at 40 °C / 104 °F  
Flammability : Not applicable.  
Oxidizing Properties : Not applicable.  
  
Explosive Properties : Not classified

### 9.2 Other Information

Electrical conductivity : Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.

Other Information : Not applicable.



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### SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity** : Stable under normal conditions of use.
- 10.2 Chemical stability** : No hazardous reaction is expected when handled and stored according to provisions.
- 10.3 Possibility of Hazardous Reactions** : Data not available
- 10.4 Conditions to Avoid** : Avoid heat, sparks, open flames and other ignition sources.
- 10.5 Incompatible Materials** : Strong oxidising agents.
- 10.6 Hazardous Decomposition Products** : Hazardous decomposition products are not expected to form during normal storage.
- Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.
- Sensitivity to Static Discharge** : Yes, in certain circumstances product can ignite due to static electricity.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on Toxicological effects

- Basis for Assessment** : Information given is based on product data, a knowledge of the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
- Acute Oral Toxicity** : Low toxicity: LD50 > 5000 mg/kg , Rat
- Acute Dermal Toxicity** : Low toxicity: LD50 >2000 mg/kg , Rabbit
- Acute Inhalation Toxicity** : Harmful if inhaled. LC50 > 1.0 - <= 5.0 mg/l / 4 h, Rat  
High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
- Skin corrosion/irritation** : Irritating to skin.
- Serious eye damage/irritation** : Expected to be slightly irritating.
- Respiratory Irritation** : Inhalation of vapours or mists may cause irritation to the

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- respiratory system.
- Respiratory or skin sensitisation** : Not expected to be a sensitiser.
- Aspiration Hazard** : Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
- Germ cell mutagenicity** : In-vitro mutagenicity studies show that mutagenic activity is related to 4-6 ring polycyclic aromatic content.
- Carcinogenicity** : Limited evidence of carcinogenic effect.  
Repeated skin contact has resulted in irritation and skin cancer in animals.

Material	Carcinogenicity Classification
Fuels, diesel	ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Fuels, diesel	GHS / CLP: Carcinogenicity Category 2
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	GHS / CLP: No carcinogenicity classification
Kerosene (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	GHS / CLP: No carcinogenicity classification
Kerosine (petroleum), hydrodesulphurised	ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Kerosine (petroleum), hydrodesulphurised	IARC 3: Not classifiable as to carcinogenicity to humans.
Kerosine (petroleum), hydrodesulphurised	GHS / CLP: No carcinogenicity classification
Kerosine	ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Kerosine	IARC 3: Not classifiable as to carcinogenicity to humans.
Kerosine	GHS / CLP: No carcinogenicity classification
Distillates (Fischer - Tropsch), heavy, C18-50 – branched, cyclic and linear	GHS / CLP: No carcinogenicity classification
Distillates (petroleum), heavy hydrocracked	GHS / CLP: No carcinogenicity classification
Cumene	IARC 2B: Possibly carcinogenic to humans.
Cumene	GHS / CLP: No carcinogenicity classification
Naphthalene	GHS / CLP: Carcinogenicity Category 2

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<b>Reproductive and Developmental Toxicity</b>	:	Not expected to impair fertility. Not expected to be a developmental toxicant.
<b>Summary on evaluation of the CMR properties</b>		
<b>Carcinogenicity</b>	:	This product does not meet the criteria for classification in categories 1A/1B.,
<b>Mutagenicity</b>	:	This product does not meet the criteria for classification in categories 1A/1B.
<b>Reproductive Toxicity (fertility)</b>	:	This product does not meet the criteria for classification in categories 1A/1B.
<b>Specific target organ toxicity - repeated exposure</b>	:	Causes damage to organs through prolonged or repeated exposure. Blood. Thymus. Liver.
<b>Additional Information</b>	:	Classifications by other authorities under varying regulatory frameworks may exist.

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**SECTION 12. ECOLOGICAL INFORMATION**

<b>Basis for Assessment</b>	:	Information given is based on a knowledge of the components and the ecotoxicology of similar products. Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
<b>12.1 Toxicity</b>		
<b>Acute Toxicity</b>	:	Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.
<b>Fish</b>	:	Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l
<b>Aquatic crustacea</b>	:	Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l
<b>Algae/aquatic plants</b>	:	Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l
<b>Microorganisms</b>	:	Expected to be harmful: LL/EL/IL50 >10 <= 100 mg/l
<b>Chronic Toxicity</b>		
<b>Fish</b>	:	NOEC/NOEL expected to be > 1.0 - <= 10 mg/l
<b>Aquatic crustacea</b>	:	NOEC/NOEL expected to be > 1.0 - <= 10 mg/l
<b>12.2 Persistence and degradability</b>	:	Major constituents are inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.
<b>12.3 Bioaccumulative Potential</b>	:	Contains constituents with the potential to bioaccumulate. Log Kow > =4

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- 12.4 Mobility in Soil** : Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile components. Floats on water.
- 12.5 Result of PBT and vPvB assesment** : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.
- 12.6 Other Adverse Effects** : Films formed on water may affect oxygen transfer and damage organisms.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste Treatment Methods

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
- Container Disposal** : Send to drum recoverer or metal reclaimer. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums. Do not pollute the soil, water or environment with the waste container. Comply with any local recovery or waste disposal regulations.
- Local Legislation** : EU Waste Disposal Code (EWC): 13 07 01 fuel oil and diesel. The number given to waste is associated with the appropriate usage. The user must decide if their particular use results in another waste code being assigned. Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may

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be more stringent than regional or national requirements and must be in compliance.  
Hazardous Waste (England and Wales) Regulations 2005.

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### SECTION 14. TRANSPORT INFORMATION

#### Land transport (ADR/RID):

##### ADR

- 14.1 UN number : 1202  
14.2 UN proper shipping name : DIESEL FUEL  
14.3 Transport hazard class(es) : 3  
14.4 Packing group : III  
Danger label (primary risk) : 3  
14.5 Environmental hazards : Yes  
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

##### RID

- 14.1 UN number : 1202  
14.2 UN proper shipping name : DIESEL FUEL  
14.3 Transport hazard class(es) : 3  
14.4 Packing group : III  
Danger label (primary risk) : 3  
14.5 Environmental hazards : Yes  
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

#### Sea transport (IMDG Code):

- 14.1 UN number : UN 1202  
14.2 UN proper shipping name : DIESEL FUEL  
14.3 Transport hazard class(es) : 3  
14.4 Packing group : III

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14.5 Environmental hazards : Yes. Marine Pollutant  
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

### Air transport (IATA):

14.1 UN number : 1202  
14.2 UN proper shipping name : Diesel fuel  
14.3 Transport hazard class(es) : 3  
14.4 Packing group : III  
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

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

Pollution Category : Not applicable.  
Ship Type : Not applicable.  
Product Name : Not applicable.  
Special Precaution : Not applicable.

**Additional Information** : MARPOL Annex 1 rules apply for bulk shipments by sea.

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## SECTION 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

#### Other regulatory Information

**Recommended Restrictions on Use (Advice Against)** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.

Other Information : Environmental Protection Act 1990 (as amended).

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Health and Safety at Work etc. Act 1974.  
Consumers Protection Act 1987.  
Pollution Prevention and Control Act 1999.  
Environment Act 1995.  
Factories Act 1961.  
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011.  
Chemicals (Hazard Information and Packaging for Supply) Regulations 2009.  
Control of Substances Hazardous to Health Regulations 2002 (as amended).  
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997.  
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended).  
Personal Protective Equipment Regulations 2002.  
Personal Protective Equipment at Work Regulations 1992.  
Hazardous Waste (England and Wales) Regulations 2005(as amended).  
Control of Major Accident Hazards Regulations 1999 (as amended).  
Renewable Transport Fuel Obligations Order 2007 (as amended).  
Energy Act 2011.  
Environmental Permitting (England and Wales) Regulations 2010 (as amended).  
Waste (England and Wales) Regulations 2011 (as amended).  
Planning (Hazardous Substances) Act 1990 and associated regulations.  
The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011.

IARC has classified diesel exhaust emissions as a Class 1 carcinogen - carcinogenic to humans. Steps should be taken to prevent personal exposure to diesel exhaust emissions.

### **15.2 Chemical Safety Assessment**

: A Chemical Safety Assessment was performed for all substances of this product.

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## **SECTION 16. OTHER INFORMATION**

### **R-phrase(s)**

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R10	Flammable.
R20	Harmful by inhalation.
R38	Irritating to skin.
R40	Limited evidence of carcinogenic effect.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.

**CLP Hazard Statements**

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H373	May cause damage to organs or organ systems through prolonged or repeated exposure.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

**Identified Uses according to the Use Descriptor System****Uses - Worker**

Title : Manufacture of substance- Industrial

**Uses - Worker**

Title : Use as an intermediate- Industrial

**Uses - Worker**

Title : Distribution of substance- Industrial

**Uses - Worker**

Title : Formulation & (re)packing of substances and mixtures- Industrial

**Uses - Worker**

Title : Use as a fuel- Industrial



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### Uses - Worker

Title : Use as a fuel- Professional

### Identified Uses according to the Use Descriptor System

### Uses - Consumer

Title : Use as a fuel  
- Consumer

**Additional Information** : This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.

### Other Information

**Further Information** : This product is intended for use in closed systems only.

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

### Abbreviations and Acronyms

: Flam. Liq. = Flammable liquids  
Asp. Tox. = Aspiration hazard  
Acute Tox. = Acute toxicity  
Skin Corr. = Skin corrosion/irritation  
Carc. = Carcinogenicity  
STOT RE = Specific target organ toxicity - repeated exposure

ACGIH = American Conference of Governmental Industrial Hygienists

ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut für Normung

DMEL = Derived Minimal Effect Level

DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

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EC = European Commission  
EC50 = Effective Concentration fifty  
ECETOC = European Center on Ecotoxicology and Toxicology  
Of Chemicals  
ECHA = European Chemicals Agency  
EH40 WEL = UK Environmental Hygiene Guidance Note 40 -  
Workplace Exposure Limit (GB only)  
EINECS = The European Inventory of Existing Commercial  
Chemical Substances  
EL50 = Effective Loading fifty  
ENCS = Japanese Existing and New Chemical Substances  
Inventory  
EWC = European Waste Code  
GHS = Globally Harmonised System of Classification and  
Labelling of Chemicals  
IARC = International Agency for Research on Cancer  
IATA = International Air Transport Association  
IC50 = Inhibitory Concentration fifty  
IL50 = Inhibitory Level fifty  
IMDG = International Maritime Dangerous Goods  
INV = Chinese Chemicals Inventory  
IP346 = Institute of Petroleum test method N° 346 for the  
determination of polycyclic aromatics DMSO-extractables  
KECI = Korea Existing Chemicals Inventory  
LC50 = Lethal Concentration fifty  
LD50 = Lethal Dose fifty per cent.  
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading  
LL50 = Lethal Loading fifty  
MARPOL = International Convention for the Prevention of  
Pollution From Ships  
NOEC/NOEL = No Observed Effect Concentration / No  
Observed Effect Level  
OE\_HP V = Occupational Exposure - High Production Volume  
PBT = Persistent, Bioaccumulative and Toxic  
PICCS = Philippine Inventory of Chemicals and Chemical  
Substances  
PNEC = Predicted No Effect Concentration  
REACH = Registration Evaluation And Authorisation Of  
Chemicals  
RID = Regulations Relating to International Carriage of  
Dangerous Goods by Rail  
SKIN\_DES = Skin Designation  
STEL = Short term exposure limit  
TRA = Targeted Risk Assessment

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TSCA = US Toxic Substances Control Act  
TWA = Time-Weighted Average  
vPvB = very Persistent and very Bioaccumulative

- Key literature references and sources for data** : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).
- SDS Distribution** : The information in this document should be made available to all who may handle the product.
- SDS Version Number** : 1.4
- SDS Effective Date** : 18.10.2012
- SDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.
- SDS Regulation** : Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
- Disclaimer** : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

## Safety Data Sheet

## Exposure Scenario - Worker

Gas Oils (vacuum,hydrocracked and distillate fuels)	
SECTION 1	EXPOSURE SCENARIO TITLE
<b>Title</b>	Manufacture of substance - Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 3, SU8, SU9 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 <b>Environmental Release Categories:</b> ERC 1, ERC 4, ESVOC SpERC 1.1.v1
<b>Scope of process</b>	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
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Section 2.1	Control of Worker Exposure
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff

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	are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
General exposures (closed systems).	No other specific measures identified.
General exposures (open systems).	Wear suitable gloves tested to EN374.
Process sampling.	No other specific measures identified.
Bulk closed loading and unloading.	Wear suitable gloves tested to EN374.
Bulk open loading and unloading.	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities.	No other specific measures identified.
Bulk product storage.	Store substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2.8E+07
Fraction of Regional tonnage used locally:	0.021

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Annual site tonnage (tonnes/year):	6.0E+05
Maximum daily site tonnage (kg/day):	2.0E+06
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1.0E-02
Release fraction to wastewater from process (initial release prior to RMM):	3.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-04
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	90.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	3.3E+06
Assumed domestic sewage treatment plant flow (m3/d)	10,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
During manufacturing no waste of the substance is generated.	

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<b>Conditions and measures related to external recovery of waste</b>
During manufacturing no waste of the substance is generated.

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

<b>Section 3.2 - Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.</p> <p>Risk Management Measures are based on qualitative risk characterisation.</p>	

<b>Section 4.2 - Environment</b>	
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 ( <a href="http://cefic.org">http://cefic.org</a> ).	

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## Exposure Scenario - Worker

<b>Gas Oils(vacuum,hydrocracked and distillate fuels)</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as an intermediate - Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 3, SU8, SU9 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 <b>Environmental Release Categories:</b> ERC 6A, ESVOC SpERC 6.1a.v1
<b>Scope of process</b>	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

<b>SECTION 2</b>	<b>OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES</b>
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<b>Section 2.1</b>	<b>Control of Worker Exposure</b>
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene has been implemented.	

<b>Contributing Scenarios</b>	<b>Risk Management Measures</b>
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff



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	are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
General exposures (closed systems).	No other specific measures identified.
General exposures (open systems).	Wear suitable gloves tested to EN374.
Process sampling.	No other specific measures identified.
Bulk closed loading and unloading.	Wear suitable gloves tested to EN374.
Bulk open loading and unloading.	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities.	No other specific measures identified.
Bulk product storage.	Store substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	3.5E+05
Fraction of Regional tonnage used locally:	0.043

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Annual site tonnage (tonnes/year):	1.5E+04
Maximum daily site tonnage (kg/day):	5.0E+04
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1.0E-03
Release fraction to wastewater from process (initial release prior to RMM):	3.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-03
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no secondary 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 of >= (%)	51.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	4.1E+05
Assumed domestic sewage treatment plant flow (m3/d)	2,000

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<b>Conditions and Measures related to external treatment of waste for disposal</b>
This substance is consumed during use and no waste of substance is generated.
<b>Conditions and measures related to external recovery of waste</b>
This substance is consumed during use and no waste of substance is generated.

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

<b>Section 3.2 - Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.</p> <p>Risk Management Measures are based on qualitative risk characterisation.</p>	

<b>Section 4.2 - Environment</b>	
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 ( <a href="http://cefic.org">http://cefic.org</a> ).	

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## Exposure Scenario - Worker

Gas Oils(vacuum,hydrocracked and distillate fuels)	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Distribution of substance - Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 3 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 15 <b>Environmental Release Categories:</b> ERC 1, ERC 2, ERC 3, ERC 4, ERC 5, ERC 6A, ERC 6B, ERC 6C, ERC 6D, ERC 7, ESVOC SpERC 1.1b.v1
<b>Scope of process</b>	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

<b>SECTION 2</b>	<b>OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES</b>
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<b>Section 2.1</b>	<b>Control of Worker Exposure</b>
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

<b>Contributing Scenarios</b>	<b>Risk Management Measures</b>
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff

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	are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
General exposures (closed systems).	No other specific measures identified.
General exposures (open systems).	Wear suitable gloves tested to EN374.
Process sampling.	No other specific measures identified.
Laboratory activities.	No other specific measures identified.
Bulk closed loading and unloading.	Wear suitable gloves tested to EN374.
Bulk open loading and unloading.	Wear suitable gloves tested to EN374.
Drum and small package filling.	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.	Store substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1

## Safety Data Sheet

Regional use tonnage (tonnes/year):	2.8E+07
Fraction of Regional tonnage used locally:	0.002
Annual site tonnage (tonnes/year):	5.6E+04
Maximum daily site tonnage (kg/day):	1.9E+05
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1.0E-03
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-06
Release fraction to soil from process (initial release prior to RMM):	1.0E-05
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
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 secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	9.6
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (MSafe) based on release following	2.9E+06

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total wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

<b>Section 3.2 - Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation.</p>	

<b>Section 4.2 -Environment</b>	
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	

**Diesel (ULSD/Gasoil/GO)**

Version 1.4

Effective Date 18.10.2012

Regulation 1907/2006/EC

## Safety Data Sheet

(<http://cefic.org>).



## Safety Data Sheet

## Exposure Scenario - Worker

<b>Gas Oils(vacuum,hydrocracked and distillate fuels)</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Formulation & (re)packing of substances and mixtures - Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 3, SU 10 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15 <b>Environmental Release Categories:</b> ERC 2, ESVOC SpERC 2.2.v1
<b>Scope of process</b>	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

<b>SECTION 2</b>	<b>OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES</b>
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<b>Section 2.1</b>	<b>Control of Worker Exposure</b>
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

<b>Contributing Scenarios</b>	<b>Risk Management Measures</b>
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.

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	Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
General exposures (closed systems).	No other specific measures identified.
General exposures (open systems).	Wear suitable gloves tested to EN374.
Process sampling.	No other specific measures identified.
Drum/batch transfers.	Use drum pumps or carefully pour from container. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Bulk transfers.	Handle substance within a closed system. Wear suitable gloves tested to EN374.
Mixing operations (open systems).	Provide extract ventilation to points where emissions occur. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Production or preparation or articles by tableting, compression, extrusion or pelletisation.	Wear suitable gloves tested to EN374.
Drum/batch transfers.	Wear suitable gloves tested to EN374.
Laboratory activities.	No other specific measures identified.
Equipment cleaning and	Drain down system prior to equipment break-in or

## Safety Data Sheet

maintenance.	maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.	Store substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2.8E+07
Fraction of Regional tonnage used locally:	0.0011
Annual site tonnage (tonnes/year):	3.0E+04
Maximum daily site tonnage (kg/day):	1.0E+05
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	1.0E-02
Release fraction to wastewater from process (initial release prior to RMM):	2.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-04
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
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 secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	60.0
If discharging to domestic sewage treatment plant, provide the	0

**Safety Data Sheet**

required onsite wastewater removal efficiency of (%)	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	6.8E+05
Assumed domestic sewage treatment plant flow (m3/d)	2,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

<b>Section 3.2 - Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

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Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation.

### Section 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>).

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## Exposure Scenario - Worker

Gas Oils(vacuum,hydrocracked and distillate fuels)	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as a fuel - Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 3 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 <b>Environmental Release Categories:</b> ERC 7, ESVOC SpERC 7.12a.v1
<b>Scope of process</b>	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

<b>SECTION 2</b>	<b>OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES</b>
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<b>Section 2.1</b>	<b>Control of Worker Exposure</b>
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

<b>Contributing Scenarios</b>	<b>Risk Management Measures</b>
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective

## Safety Data Sheet

	equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
Bulk transfers.	Wear suitable gloves tested to EN374.
Drum/batch transfers.	Wear suitable gloves tested to EN374.
Use as a fuel(closed systems).	No other specific measures identified.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.	Handle substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	4.5E+06
Fraction of Regional tonnage used locally:	0.34
Annual site tonnage (tonnes/year):	1.5E+06
Maximum daily site tonnage (kg/day):	5.0E+06
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10

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Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	5.0E-03
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05
Release fraction to soil from process (initial release prior to RMM):	0
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
Onsite waste water treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	60.4
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	97.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	5.5E+06
Assumed domestic sewage treatment plant flow (m3/d)	2,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

## SECTION 3

## EXPOSURE ESTIMATION



**Safety Data Sheet****Section 3.1 - Health**

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

**Section 3.2 - Environment**

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

**SECTION 4****GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO****Section 4.1 - Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Risk Management Measures are based on qualitative risk characterisation.

**Section 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>).

## Safety Data Sheet

## Exposure Scenario - Worker

Gas Oils(vacuum,hydrocracked and distillate fuels)	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as a fuel - Professional
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 22 <b>Process Categories:</b> PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 <b>Environmental Release Categories:</b> ERC 9A, ERC 9B, ESVOC SpERC 9.12b.v1
<b>Scope of process</b>	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

<b>SECTION 2</b>	<b>OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES</b>
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<b>Section 2.1</b>	<b>Control of Worker Exposure</b>
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently)..
<b>Frequency and Duration of Use</b>	
Covers daily exposures up to 8 hours (unless stated differently).	
<b>Other Operational Conditions affecting Exposure</b>	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

<b>Contributing Scenarios</b>	<b>Risk Management Measures</b>
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective

## Safety Data Sheet

	equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
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.
Bulk transfers.	Wear suitable gloves tested to EN374.
Drum/batch transfers.	Wear suitable gloves tested to EN374.
Refueling.	Wear suitable gloves tested to EN374.
Use as a fuel(closed systems).	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). , or: Ensure operation is undertaken outdoors.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.	Store substance within a closed system.

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	6.7E+06
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	3.3E+03
Maximum daily site tonnage (kg/day):	9.2E+03
<b>Frequency and Duration of Use</b>	

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Continuous release.	
Emission Days (days/year):	365
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1.0E-04
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05
Release fraction to soil from process (initial release prior to RMM):	1.0E-05
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1.4E+05
Assumed domestic sewage treatment plant flow (m3/d)	2,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
<b>Conditions and measures related to external recovery of waste</b>	

**Safety Data Sheet**

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

**SECTION 3****EXPOSURE ESTIMATION****Section 3.1 - Health**

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

**Section 3.2 - Environment**

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

**SECTION 4****GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO****Section 4.1 - Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
Risk Management Measures are based on qualitative risk characterisation.

**Section 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>).

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## Exposure Scenario - Consumer

Gas Oils(vacuum,hydrocracked and distillate fuels)	
SECTION 1	EXPOSURE SCENARIO TITLE
<b>Title</b>	Use as a fuel - Consumer
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU 21 <b>Product Categories:</b> PC13 <b>Environmental Release Categories:</b> ERC 9A, ERC 9B, ESVOC SpERC 9.12c.v1
<b>Scope of process</b>	Covers consumer uses in liquid fuels.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
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Section 2.1	Control of Consumer Exposure
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure > 10 Pa at STP
Concentration of substance in product.	Unless otherwise stated:
	Covers concentrations up to 100 %
<b>Amounts Used</b>	
Unless otherwise stated:	
for each use event, covers amount up to (g):	37,500
covers skin contact area (cm <sup>2</sup> ):	420
<b>Frequency and Duration of Use</b>	
Unless otherwise stated:	
covers use up to (times/day of use):	0.143
Covers use up to (hours/event):	2

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Fuels. Liquid: Automotive Refuelling.	Covers concentration up to (%): 100 %
	Covers use up to (days/year): 52 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to 210 cm <sup>2</sup>
	For each use event, covers amount up to 37,500 g.
	Covers outdoor use.
	Covers use in room size of 100 m <sup>3</sup>

## Safety Data Sheet

	Covers exposure up to 0.05 hours/event
Fuels. Liquid, Garden Equipment - Use.	Covers concentrations up to 100 %
	covers use up to 26 day/year
	Covers use up to 1 times/day of use
	For each use event, covers amount up to 750 g.
	Covers outdoor use.
	Covers use in room size of 100 m3
	Covers exposure up to 2.00 hours/event
Fuels. Liquid: Garden Equipment - Refuelling.	Covers concentrations up to 100 %
	covers use up to 26 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to 420 cm2
	For each use event, covers amount up to 750 g.
	Covers use in a one car garage (34 m3) under typical ventilation.
	Covers use in room size of 34 m3
	Covers exposure up to 0.03 hours/event

<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.6E+07
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	8.2E+03
Maximum daily site tonnage (kg/day):	2.3E+04
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	365
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from wide dispersive use (regional only):	1.0E-04
Release fraction to wastewater from wide dispersive use:	1.0E-05
Release fraction to soil from wide dispersive use (regional only):	1.0E-05
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1

**Safety Data Sheet**

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	3.5E+05
Assumed domestic sewage treatment plant flow (m3/d)	2,000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.	

<b>Section 3.2 - Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

<b>Section 4.2 -Environment</b>	
Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org">http://cefic.org</a> ).	