

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

1.1 Product identifier

Product name: Gas Oil Class A2, Class D

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

Identified use(s): Fuel.

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

1.3 Details of the supplier of the safety data sheet

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

Telephone: 0800 685 685

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

1.4 Emergency telephone number

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

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture

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

Flam. Liq. 3; H226
Asp Tox 1; H304
Skin Irrit. 2; H315
Acute Tox. 4; H332
Carc. 2; H351
STOT RE 2; H373 (Thymus, liver, bone marrow)
Aquatic Chronic 2; H411

2.2 Label elements

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

Hazard pictogram(s):



Signal Word: Danger.

Hazard Statement(s): H226: Flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H332: Harmful if inhaled.
H351: Suspected of causing cancer
H373: May cause damage to organs (Thymus, liver, bone marrow) through prolonged or repeated exposure.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe vapours
P273: Avoid release to the environment
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P501: Dispose of contents/container to approved disposal facility.

Supplemental Hazard information (EU):

None.

2.3 Other hazards

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

SECTION 3: Composition/Information on Ingredients

3.1 Substances

Chemical name	% w/w	CAS No.	EC No.	Index No.	Classification (Regulation (EC) No. 1272/2008 (CLP))
Fuels, diesel <i>REACH: 01-2119484664-27-XXXX</i>	100	68334-30-5	269-822-7	649-224-00-6	Flam. Liq. 3; H226 Asp Tox 1; H304 Skin Irrit. 2; H315 Acute Tox. 4 H332 Carc. 2 H351 STOT RE 2; H373 (Thymus, liver, bone marrow) Aquatic Chronic 2; H411

See Section 16 for full description of H statements.

Total sulfur content: < 0.1% w/w

SECTION 4: First Aid Measures

4.1 Description of first aid measures

INHALATION:

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

SKIN CONTACT:

Remove contaminated clothing immediately. Wash with plenty of soap and water. If skin irritation occurs obtain medical advice/attention. Wash contaminated clothing before reuse.

EYE CONTACT:

Remove contact lenses if present and easy to do. Wash eyes

immediately with plenty of water, making sure to rinse under eyelids. If symptoms persist, obtain medical attention.

INGESTION:

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

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

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

Suspected of causing cancer. May cause damage to organs (Thymus, liver, bone marrow) through prolonged or repeated exposure.

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

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

SECTION 5: Fire-fighting Measures**5.1 Extinguishing Media**

Suitable extinguishing media: Foam, CO2 or dry powder.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour: Vapour may form explosive mixture with air. Vapours are heavier than air and may spread along floors. Flash back possible over considerable distance. The pressure in sealed containers can increase under the influence of heat. Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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

5.3 Advice for fire-fighters

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

SECTION 6: Accidental Release Measures**6.1 Personal precautions, protective equipment and emergency procedures****6.1.1 For non-emergency personnel**

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

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

6.1.2 For emergency responders

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

6.2 Environmental precautions

Absorb or contain any spilled liquid with an absorbent (e.g. diatomite, vermiculite, sand) and dispose of according to regulations. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If spill occurs on water notify the appropriate authorities and advise shipping of any hazard (as appropriate).

6.3 Methods and materials for containment and cleaning up

6.3.1 For containment

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

6.3.2 For cleaning up

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

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

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

6.3.3 Other advice

None.

6.4 Reference to other sections

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

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

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

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Provide adequate ventilation, including local extraction, to ensure occupational exposure limits are not exceeded. Avoid breathing vapours/spray. Avoid contact with skin and eyes. Wear suitable personal protective equipment (See Section 8).

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

Product transfer

Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Contamination resulting from product transfer may give rise to light hydrocarbon vapour

in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Tank cleaning

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

7.2 Conditions for safe storage, including any incompatibilities

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

Keep away from oxidising agents, reducing agents.

This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep in a bunded area with a sealed floor to provide containment against spillage. Stack drums to a height not exceeding three metres without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Recommended Storage Container materials

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

Unsuitable Storage Container materials

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

7.3 Specific end uses(s)

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

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Workplace exposure limits

Substance	CAS No.	LTE (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Hydrocarbons, normal and branch-chained $\geq C_7$	68334-30-5	-	1200	-	-	

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

Other exposure limits

Source: American Conference of Governmental Industrial Hygienists (ACGIH)

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Fuels, diesel	68334-30-5	-	100	-	-	Skin

Skin: Can be absorbed through the skin

DNELs (Workers)

Inhalation: 68.3 mg/m³/day

Dermal: 2.9 mg/kg bw/day

DNELs (Consumers)

Inhalation: 61.2 mg/m³/day

Dermal: 1.3 mg/kg bw/day

PNECs

None assigned.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

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

8.2.2 Personal protection

Eye protection:

Goggles or safety glasses with side shields giving complete protection to eyes. (EN 166). Depending on conditions of use, close-fitting eye protection and a face shield may be necessary.

Skin protection:

Hand protection:

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

Other:

Long sleeve protective clothing. Plastic apron. Rubber boots.

Respiratory protection:

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

Thermal hazards:

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

8.2.3 Environmental exposure controls

Inform environmental manager of all incidents involving this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Data given below are typical values

Appearance:	Red liquid
Odour:	Characteristic
Odour threshold:	Not available.
pH:	Not applicable.
Melting/freezing point:	Not available.
Initial boiling point and boiling range:	165 – 375°C
Flash point:	> 55°C (closed cup)
Evaporation rate:	Not available.
Flammability (solid; gas):	Not applicable.
Upper/lower flammability or explosive limits:	0.5% – 6.0% (v/v in air)
Vapour pressure:	< 0.3 kPa (20°C)
Vapour density:	> 1 (Air = 1)
Relative density:	0.81 – 0.89 (15°C) (Water = 1)
Solubility(ies):	Negligible in water (20°C). Miscible in organic solvents.
Partition coefficient: n-octanol/water:	Log Kow: 3.9-6 (approximate)
Auto-ignition temperature:	250-350°C
Decomposition temperature:	Not available.
Viscosity:	4.8 mm ² /s (20°C) 1.5-4.5 mm ² /s (40°C)
Explosive properties:	Not explosive. Vapour may form explosive mixture in air.
Oxidising properties :	Not oxidising.

9.2 Other information

Pour point:	-24°C
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SECTION 10: Stability and Reactivity

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

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

No data available on the mixture. The following data are for the product components:

Fuels, diesel:

LD₅₀ (oral/rat): > 5,000 mg/kg

LD₅₀ (dermal/rabbit): > 4,300 mg/kg

LC₅₀ (inhalation/rat (male and female/mist): > 4.1 mg/L air (analytical), 4 h

LC₅₀ (inhalation/rat (male/mist): > 5.4 mg/L air (analytical), 4 h

LC₅₀ (inhalation/rat (female/mist): > 3.6 mg/L air (analytical), 4 h

Skin corrosion/irritation

Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious eye damage/irritation

May cause slight eye irritation.

Skin sensitisation

Not classified. Not expected to be a skin sensitiser.

Respiratory sensitisation

Not classified. Not expected to be a respiratory sensitiser.

Germ cell mutagenicity

The product does not contain substances classified as mutagenic above the classification thresholds.

Carcinogenicity

Suspected of causing cancer. Petroleum middle distillates have been shown to cause skin tumours in mice following repeated and prolonged skin contact. Follow-up studies have shown that these tumours are produced through a non-genotoxic mechanism associated with frequent cell damage and repair, and that they are not likely to cause tumours in the absence of prolonged skin irritation.

Reproductive toxicity

The product does not contain substances classified for reproductive toxicity above the classification thresholds.

Specific Target Organ Toxicity – single exposure

Acute exposure studies do not indicate any specific organ toxicity following single exposure to vacuum or hydrocracked gas oils and distillate fuels (API, 1980a; API, 1980b; ARCO, 1988)

Specific Target Organ Toxicity – repeated exposure

May cause damage to organs through prolonged or repeated exposure. Repeated dermal application of petroleum gas oils for 90 days resulted in decreased liver, thymus, and spleen weights, and altered bone marrow function. Microscopic alterations included liver hypertrophy and necrosis, decreased hematopoiesis and lymphocyte depletion.

Aspiration hazard

May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia.

Information on likely routes of exposure

Inhalation

Inhalation of high concentrations of vapours may cause drowsiness or dizziness.

Skin contact

Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Eye contact

May cause slight eye irritation.

Ingestion

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

Symptoms related to the physical, chemical and toxicological characteristics

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

Mixture versus substance information

No data available.

Other information

None.

SECTION 12: Ecological Information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

Experimental studies on samples of gas oils show acute aquatic toxicity values typically in the range 2-20 mg/L. These values are consistent with the predicted aquatic toxicity based on their hydrocarbon compositions.

Fuels, diesel:

LL₅₀ (*Oncorhynchus mykiss*): 21 mg/L, 96 h (WAF)

NOEL (*Oncorhynchus mykiss*): 10 mg/L, 96 h (WAF)

NOEL (*Oncorhynchus mykiss*): 0.083 mg/L, 14 days (WAF) (estimated using PETROTOX computer model)

EL₅₀ (*Daphnia magna*): 210 mg/L, 48 h (WAF)

NOEL (*Daphnia magna*): 46 mg/L, 48 h (WAF)

NOEL (*Daphnia magna*): 0.2 mg/L, 21 days (WAF) (estimated using PETROTOX computer model)

EL₅₀ (*Pseudokirchnerella subcapitata*): 10 mg/L, 72 h (biomass)

NOEL (*Pseudokirchnerella subcapitata*): 1 mg/L, 72 h (biomass)

EL₅₀ (*Pseudokirchnerella subcapitata*): 22 mg/L, 72 h (growth rate)

NOEL (*Pseudokirchnerella subcapitata*): 1 mg/L, 72 h (growth rate)

EL₅₀ (*Tetrahymena pyriformis*): > 1,000 mg/L, 40 h (estimated using PETROTOX computer model)

NOEL (*Tetrahymena pyriformis*): 3.217 mg/L, 40 h (estimated using PETROTOX computer model)

12.2 Persistence and degradability

Based on the known or expected properties of individual components, the product is not expected to be readily biodegradable. Some components are expected to be persistent however other components will be easily degraded by microorganisms under aerobic conditions.

12.3 Bioaccumulative potential

The product components have measured or predicted Log Kow values in the range 3.9 – 6 or above and therefore have a high potential to bioaccumulate. In practice, lower molecular weight compounds will be readily metabolised and the actual bioaccumulation potential of higher molecular weight compounds is limited by the low water solubility and large molecular size.

12.4 Mobility in soil

The product components are immiscible in water and will float on the surface of water. Lower molecular weight components will evaporate from the surface, reducing the risk to aquatic organisms. In air the hydrocarbon components undergo

photodegradation by hydroxyl radicals with half lives in the range of less than one day.
The majority of components will be adsorbed onto sediment. Adsorption is the predominant process on release to soil. Adsorbed components will slowly degrade in both water and soil.

12.5 Results of PBT and vPvB assessment

The product does not contain substances assessed to be PBT or vPvB.

12.6 Other adverse effects

None known.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

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

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

Suggested EU Waste Code: 13 07 01* (fuel oil and diesel). Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport Information

ADR

14.1	UN Number	1202
14.2	UN Proper shipping name	DIESEL FUEL
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

ADN

14.1	UN Number	1202
14.2	UN Proper shipping name	DIESEL FUEL
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

RID

14.1	UN Number	1202
14.2	UN Proper shipping name	DIESEL FUEL
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

IATA/ICAO

14.1	UN Number	1202
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14.2	UN Proper shipping name	DIESEL FUEL
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.

IMDG

14.1	UN Number	1202
14.2	UN Proper shipping name	DIESEL FUEL
14.3	Transport hazard class(es)	3
14.4	Packing group	III
14.5	Environmental hazards	Marine pollutant.
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	The product is not intended to be transported in bulk.

SECTION 15: Regulatory Information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006 as amended. The product has been classified in accordance with Regulation (EC) No. 1272/2008 (CLP), Directive 67/548/EEC & Directive 1999/45/EC.
- 15.2 Chemical Safety Assessment**
A chemical safety assessment has been carried out.

SECTION 16: Other Information

Full text of relevant H-statements:

Hazard Statement(s):	H226: Flammable liquid and vapour. 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 through prolonged or repeated exposure. H411: Toxic to aquatic life with long lasting effects.
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Supplemental Hazard information (EU):	Not applicable.
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Abbreviations:

CAS:	Chemical Abstracts Service;
EINECS:	European Inventory of Existing Commercial Chemical Substances
EC ₅₀ :	Effective Concentration 50%
EL ₅₀ :	Effective Loading rate 50%
LC ₅₀ :	Lethal Concentration 50%
LD ₅₀ :	Lethal Dose 50%
LL ₅₀ :	Lethal Loading rate 50%
LOEL:	Lowest Observed Effect Level
NOEL:	No Observed Effect Level
PBT:	Persistent, Bioaccumulative and Toxic.
RMM:	Risk Management Measures

UVCB: Substance of Unknown or Variable composition, Complex reaction products or Biological materials
vPvB: Very Persistent and Very Bioaccumulative
WAF: Water Accommodated Fraction

References:

Supplier's Safety Data Sheets
ECHA disseminated REACH dossiers
ECHA Classification and Labelling Inventory
Approved Classification and Labelling Guide (Sixth edition)
Regulation (EC) No. 1272/2008 of the European Parliament and of the council.
GESTIS database

Disclaimer:

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

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

Further information:

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

Version history:

Version:	8.0
Issue date:	16/03/2016
Previous Version:	7.1
Issue date of previous version:	10/09/2014
Sections changed from previous version:	1-16

Annex to extended Safety Data Sheet (eSDS)

1. Manufacture of substance – Industrial

Section 1: Exposure scenario	
Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Manufacture of substance	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact

	with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Bulk closed loading and unloading:	Handle within a closed system. Wear suitable gloves tested to EN 374.
Bulk open loading and unloading:	Wear suitable gloves tested to EN 374.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN 374 in combination with basic employee training.
Bulk product storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.021
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.00003
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	

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 (%):	≥ 90.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
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 (%):	97.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	3,300,000
Assumed domestic sewage treatment plant flow (m ³ /d):	10,000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in the PETRORISK file 'Site Specific Production' Worksheet.	

2. Use of substance as an intermediate – Industrial

Section 1: Exposure scenario Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Use as an intermediate	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.

	PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.	
Environmental Release Category(ies):	ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)	
Specific Environmental Release Category:	ESVOC SpERC 6.1a.v1	
Processes, tasks, activities covered		
Use of the substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.		
Section 2: Operation conditions and risk management measures		
2.1 Control of worker exposure		
Product Characteristics		
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.	
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).	
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).	
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.	
Contributing Scenarios		
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions	
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.	
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.	
General exposures (closed systems):	Handle within a closed system.	
General exposures (open systems):	Wear suitable gloves tested to EN 374.	
Process sampling:	No other specific measures identified.	
Bulk closed loading and unloading:	Handle within a closed system. Wear suitable gloves tested to EN 374.	
Bulk closed loading and unloading:	Wear suitable gloves tested to EN 374.	
Laboratory activities:	No other specific measures identified.	
Equipment cleaning and maintenance:	No other specific measures identified.	
Bulk product storage:	Store substance within a closed system.	
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.		

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

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	350,000
Fraction of regional tonnage used locally:	0.043

Frequency and duration of use

Continuous release.

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

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

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.00003
Release fraction to soil from process (initial release prior to RMM)	0.001

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

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.

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 (%):	≥ 51.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0

Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Do not apply industrial sludge to natural soils.

Sludge should be incinerated, contained or reclaimed.

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
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):	410,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

3. Distribution of substance – Industrial

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

packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.
Bulk closed loading and unloading:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Bulk open loading and unloading:	Wear suitable gloves tested to EN 374.
Drum and small package filling:	Wear suitable gloves tested to EN 374.
Equipment cleaning and maintenance:	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.002

Frequency and duration of use

Continuous release.

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

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

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.000001
Release fraction to soil from process (initial release prior to RMM)	0.00001

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

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater 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 (%):	≥ 9.6
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0

Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Do not apply industrial sludge to natural soils.

Sludge should be incinerated, contained or reclaimed.

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
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):	410,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation

3.1 Health

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

3.2 Environment

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

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

4.1 Health

Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions

are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.

4.2 Environment

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

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

Section 1: Exposure scenario

Vacuum of Hydrocracked Gas Oils and Distillate Fuels

Title

Formulation and (Re)packing of substances and mixtures

Use Descriptor

Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 2: Formulation of preparations.
Specific Environmental Release Category:	ESVOC SpERC 2.2.v1

Processes, tasks, activities covered

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

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

Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Drum/batch transfers:	Use drum pumps or carefully pour from container. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Bulk transfers:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Mixing operations (open systems):	Provide extract ventilation to points where emissions occur. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Production or preparation of articles by tableting, compression, extrusion or pelletisation:	Wear suitable gloves tested to EN 374.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN 374.
Storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.	

2.2 Control of Environmental Exposure	
Product Characteristics Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.0011
Frequency and duration of use Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.00002
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	
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 (%):	≥ 60.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	91.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	680,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	

4.2 Environment

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

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

Section 1: Exposure scenario

Vacuum of Hydrocracked Gas Oils and Distillate Fuels

Title

Use in metal working fluids/rolling oils

Use Descriptor

Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 7: Industrial spraying. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 10: Roller application or brushing. PROC 13: Treatment of articles by dipping and pouring. PROC 17: Lubrication at high energy conditions and in partly open process.
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 4.7a.v1

Processes, tasks, activities covered

Covers the use in formulated metal working fluids (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

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

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Provide extract ventilation to points where emissions occur.
Bulk transfers:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Filling/preparation of equipment from drums or containers:	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Metal machining operations:	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear suitable gloves (tested to EN 374), coveralls and eye protection.
Treatment by dipping and pouring:	Wear suitable gloves tested to EN 374.
Spraying:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Automated metal rolling/forming:	Handle substance within a predominantly closed system provided with extract ventilation.
Semi-automated metal rolling/forming:	Provide extract ventilation to points where emissions occur.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance in a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	10,000
Fraction of regional tonnage used locally:	0.01
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.02
Release fraction to wastewater from process (initial release prior to RMM)	0.000003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	78,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-	

[Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf](#).

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

Section 1: Exposure scenario	
Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Use as release agents or binders	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 7: Industrial spraying. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 13: Treatment of articles by dipping and pouring. PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation.
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 4.10a.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide

	basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Bulk transfers:	Handle substance within a closed system.
Drum/batch transfers:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Mixing operations (closed systems):	No other specific measures identified.
Mixing operations (open systems):	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Mould forming:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Casting operations (open systems):	Minimise exposure by partial enclosure for the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN 374.
Machine spraying:	Minimise exposure by extracted full enclosure for the operation or equipment. Wear suitable gloves tested to EN 374.
Manual spraying:	Wear a full face respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with specific activity training.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.

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

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	14,000
Fraction of regional tonnage used locally:	0.18

Frequency and duration of use

Continuous release.

Emission days (days/year):	100
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Environmental factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0
Release fraction to wastewater from process (initial release prior to RMM)	0.0000003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 59.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
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):	170,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

Section 1: Exposure scenario	
Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Use as release agents or binders	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 11: Non-industrial spraying. PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation.
Environmental Release Category(ies):	ERC 8a: Wide dispersive indoor use of processing aids in open systems. ERC 8d: Wide dispersive outdoor use of processing aids in open systems.
Specific Environmental Release Category:	ESVOC SpERC 8.10b.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application by spraying and brushing and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures

	such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Material transfers (closed systems):	No other specific measures identified.
Drum/batch transfers:	Wear suitable gloves tested to EN 374.
Mixing operations (closed systems):	No other specific measures identified.
Mixing operations (open systems):	Wear suitable gloves tested to EN 374.
Mould forming:	Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN 374.
Casting operations with local exhaust ventilation:	Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN 374.
Casting operations without local exhaust ventilation:	Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection.
Manual spraying with local exhaust ventilation:	Carry out in a vented booth or extracted enclosure. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual spraying without local exhaust ventilation:	Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with specific activity employee training.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance in a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.

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

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2,900
Fraction of regional tonnage used locally:	0.0005

Frequency and duration of use

Continuous release.

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

Local freshwater dilution factor:	10
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Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to RMM)	0.025
Release fraction to soil from process (initial release prior to RMM)	0.025
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
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):	62
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

Section 1: Exposure scenario	
Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 7: Industrial use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Bulk transfers:	Wear suitable gloves tested to EN 374.
Drum/batch transfers:	Wear suitable gloves tested to EN 374.
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 chemical-resistant gloves (tested to EN 374) in combination with

	'basic' employee training.
Storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	4,500,000
Fraction of regional tonnage used locally:	0.34
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.005
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 60.4
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
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):	5,500,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

9. Use of substance as a fuel – Professional

Section 1: Exposure scenario	
Vacuum of Hydrocracked Gas Oils and Distillate Fuels	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	

Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed 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 the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Bulk transfers:	Wear suitable gloves tested to EN 374.
Drum/batch transfers:	Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN 374.
Refuelling:	Wear suitable gloves tested to EN 374.
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 chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect. Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	

Product Characteristics	
Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	6,700,000
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use	
Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.0001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	140,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	

4.2 Environment

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

10. Use of substance as a fuel – Consumer

Section 1: Exposure scenario

Vacuum of Hydrocracked Gas Oils and Distillate Fuels

Title

Use as a fuel

Use Descriptor

Sector(s) of use: SU 21: Consumer uses: Private households (= general public = consumers).

Product Category(ies): PC 13: Fuels.

Environmental Release Category(ies):
ERC 9a: Wide dispersive indoor use of substances in closed systems.
ERC 9b: Wide dispersive outdoor use of substances in closed systems.

Specific Environmental Release Category: ESVOG SpERC 9.12c.v1

Processes, tasks, activities covered

Covers consumer uses of liquid fuels.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product:	Liquid. Vapour pressure: > 10 Pa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Amounts used:	For each use event, covers use amounts of up to 37,500 g. Covers skin contact area of up to 420 cm ² .
Frequency and duration of use:	Covers use up to 0.143 times per day (i.e. one use every 7 days). Covers exposure of up to 2 hours per use event.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
Liquid: Automotive refuelling	Covers concentrations of up to 100%. Covers use up to 52 days/year. Covers use up to 1 time per day. Covers skin contact area up to 210 cm ² . For each use event, covers use amounts up to 37,500 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 0.05 hours (3 min) per use event. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - Use	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. For each use event, covers use amounts up to 750 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 2 hours per use event. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - refuelling	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day.

	Covers skin contact area up to 420 cm². For each use event, covers use amounts 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 of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.
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Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMS.

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

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	16,000,000
Fraction of regional tonnage used locally:	0.0005

Frequency and duration of use

Continuous release.

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

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

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	350,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate consumer exposures consistent with the content of ECETOC report #107 and Chapter R15 of the IR & CSA TGD. Where exposure determinants differ to these sources they are indicated.

3.2 Environment

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

Section 4: Guidance to check the compliance with the exposure scenario**4.1 Health**

Users are advised to consider national Occupational Exposure Limits (OELs) or other equivalent values.

Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

4.2 Environment

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