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MASS SULPHUR CONTENT LESS 0,1%

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1 IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier:

Identification on the label/Trade name(s): GAS OIL (AS PER CONTRACT SPECIFICATION, MASS SULPHUR CONTENT LESS 0.1%) OR GASOIL (OR GAS OIL)

Name of Substance: CAS No.: EC No.: Index No.:	Fuels, diesel	68334-30-5	269-822-7	649-224-00-6
	Name of Substance:	CAS No.:	EC No.:	Index No.:

REACH registration No.: 01-2119484664-27-0097

1.2 Relevant identified uses of the substance and uses advised against:

1.2.1 Identified uses:

-Manufacture of substances, -Use in Oil and Gas Field Drilling and Production

-Use of substance as intermediate, Operations: Industrial, professional -Distribution of substance, -Lubricants: Industrial, professional

-Formulation and repackaging of substances & mixtures -Use as Release Agents or Binders: Industrial,

-Use in Metal Working Fluids / Rolling Oils: Industrial professional

-Use as Functional Fluids: Industrial -Use in Road and Construction Applications:

-Rubber Production and processing: Industrial Professional

-Uses in Coatings: Industrial, professional
 -Explosives Manufacture & Use: Professional
 -Use as a fuel: Industrial, professional, consumer

1.2.2 Uses advised against: Uses other than those given above, are not recommended.

1.3 Manufacturer

"Orsknefteorgsintez", OJSC. Goncharova str., 1a, Orsk city, Orenburg region, 462407, Russian Federation

1.4 Details of the supplier of the safety data sheet:

Only Representative: SpetsInterProject Oy E-mail: hs@reach-registrator.net

1.5 Emergency telephone Number:

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification:

EU CLP 1272/2008: This classification relates to Vacuum gas oils, Hydrocracked gas oils, and Distillate fuels (Non-flammable)

<u>Classification:</u> Acute Tox. 4; H332; Skin Irrit. 2; H315; Asp. Tox. 1; H304; Carc. 2; H351; STOT RE 2; H373; Aquatic Chronic 2; H411

For full text of H- phrases: see section 2.2.

67/548/EEC(DSD): This classification relates to Vacuum gas oils, Hydrocracked gas oils, and Distillate fuels Status: Annex 1 in combination with Self Classification

Classification: Xn; R65; R20; Xi; R38; Carc. Cat. 3; R40; N; R51/53

Indication of danger:

N - dangerous for the environment

Xi - irritant

Xn - harmful

R-phrases:

R20 - harmful by inhalation

R38 - irritating to skin

R40 - limited evidence of a carcinogenic effect

R51/53 - toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

R65 - harmful: may cause lung damage if swallowed

S-phrases:

S2 - keep out of the reach of children (Applicable only when sold to the general public)

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S23 - do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)

S24 - avoid contact with skin

S36/37 - wear suitable protective clothing and gloves

S51 - use only in well-ventilated areas

S61 - avoid release to the environment. refer to special instructions/safety data sheets

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

2.1.2 The most important adverse effects

Physical/chemical The product may form flammable mixtures with air when heated above the flash point.

hazards:

For health hazards: Vapours or mists are irritating for mucous membranes, notably in the eyes. If swallowed

accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). High doses may cause nausea and headaches. Prolonged or repeated contact with skin destroys the lipoacid skin layer and may cause dermatitis. May cause damage to organs through prolonged or repeated exposure: affected organs - blood, thymus, liver. Suspected

of causing cancer

DO NOT INGEST. IF SWALLOWED THEN SEEK IMMEDIATE MEDICAL ASSISTANCE.

For environmental

hazards:

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements:

Hazard Pictograms:



Signal Word(S): Danger

Hazard Statements: 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.

Precautionary Statements: P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

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.

P332+P313: If skin irritation occurs: Get medical advice/attention.

P501: Dispose of contents/container to...

2.3 Other hazards: The substance does not fulfill the PBT / vPvB criteria.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance:

Description: A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C20 and boiling in the range of approximately 163°C to 357°C (325°F to 675°F).

The substance is UCVB substance. The purity is 100%

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Ingredient(s)/Constituent(s):

Name of Constituent:	CAS No.:	EC No.:	Index No.:	Composition, % (w/w):
Mono-aromatic hydrocarbons	-	-	-	21.7
Di-aromatic hydrocarbons	-	-	-	5.1
Tri-aromatic hydrocarbons and higher	-	-	-	0.4
Unknown constituents	-	-	-	72.8

4 FIRST AID MEASURES

4.1 Description of first aid measures:

4.1.0 Warning: before intervention

Spillages make surface slippery

Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply.

Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.

(Subject to applicability) Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

4.1.1 In case of inhalation:

Inhalation at ambient temperature is unlikely because of the low vapour pressure of the substance. Exposure to vapours may however occur when the substance is handled at high temperatures with poor ventilation.

Symptoms: irritation of the respiratory tract due to excess fume, mists or vapour exposure.

In case of symptoms arising from inhalation of fumes or mists or vapours: Remove casualty to a quiet and well ventilated place if safe to do so

If casualty is unconscious and:

- Not breathing ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.
- Breathing place in the recovery position. Administer oxygen if necessary.

Obtain medical assistance if breathing remains difficult.

(subject to applicability) If there is any suspicion of inhalation of H2S:

- * Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.
- * Remove casualty to fresh air as quickly as possible.
- * Immediately begin artificial respiration if breathing has ceased.
- * Provision of oxygen may help.
- * Obtain medical advice for further treatment.

4.1.2 In case of skin contact:

Symptoms: reddening, irritation.

Remove contaminated clothing and footwear and dispose of safely. Wash affected area thoroughly with soap and water. Seek medical attention if skin irritation, swelling or redness develops and persists

(Subject to applicability – use as fuel or functional fluid) When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop.

For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.

4.1.3 In case of eyes contact:

Symptoms: slight irritation (unspecific).

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Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist

4.1.4 In case of ingestion/aspiration:

Symptoms: few or no symptoms expected. If any, nausea and diarrhoea might occur.

In case of ingestion, always assume that aspiration has occurred. The casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Do not induce vomiting as there is high risk of aspiration. Do not give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: Irritation of the respiratory tract due to excess fume, mists or vapour exposure.

Skin contact: Dry skin, irritation may arise in case of repeated or prolonged exposure. May cause burn in

case of contact with product at high temperature

Eyes contact: Slight irritation (unspecific). May cause burn in case of contact with product at high

temperature.

Ingestion/aspiration: Aspiration of product into the lungs, either directly or as a consequence of vomiting

following ingestion, may result in damage to lung tissue.

4.3 Indication of any immediate medical attention and special treatment needed

Immediately call a POISON CENTER or doctor/physician.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: Foam (Specifically trained personnel only), water fog (Specifically trained personnel only), dry chemical powder, carbon dioxide, other inert gases (subject to regulations), sand or earth.

Unsuitable extinguishing media: Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Special hazards arising from the substance or mixture

Combustion Products: Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds. If sulfur compounds are present in appreciable amounts, combustion products may include also H2S and SOx (sulfur oxides) or sulfuric acid.

This substance will float and can be reignited on surface water.

5.3 Advice for fire-fighters:

In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel:

Stop or contain leak at the source if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert occupants in downwind areas. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares).

(Subject to applicability): In those cases when the presence of dangerous amounts of H2S around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training

If required, notify relevant authorities according to all applicable regulations.

6.1.2 For emergency responders:

Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material.

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Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Note: gloves made of PVA are not water-resistant, and are not suitable for emergency use.

Work helmet. Antistatic non-skid safety shoes or boots

Goggles or face shield, if splashes or contact with eyes is possible or anticipated.

Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (and when applicable for H2S) or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

6.2 Environmental precautions:

Prevent product from entering sewers, rivers, waterways or other bodies of water

6.3 Methods for containment and cleaning up:

Spillages onto land

Prevent product from entering sewers, rivers, waterways or other bodies of water. If necessary dike the product with dry earth, sand or similar non-combustible materials. Large spillages may be cautiously covered with foam, if available, to limit vapour cloud formation. Do not use direct jets. When inside buildings or confined spaces, ensure adequate ventilation.

Absorb spilled product with suitable non-combustible materials. Collect free product with suitable means. Transfer collected product and other contaminated materials to suitable containers for recovery or safe disposal. In case of soil contamination, remove contaminated soil and treat in accordance with local regulations.

Spillages on water or at sea

In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other materials in suitable tanks or containers for recovery or safe disposal.

6.4 Reference to other sections:

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

6.5 Additional information:

Note: recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

(Subject to applicability): Concentration of H2S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations which involve direct exposure to the vapours in the tank.

(Subject to applicability): Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which are unlikely to entail exposure to dangerous concentrations. As H2S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling:

General information:

Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed. (Subject to applicability) A specific assessment of inhalation risks from the presence of H2S in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances. Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

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Use and store only outdoors or in a well-ventilated area. Avoid contact with the product. Avoid release to the environment.

7.1.1 Protective measures:

Take precautionary measures against static electricity. Ground/bond containers, tanks and transfer/receiving equipment. Use only non-sparking tools. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Do not use compressed air for filling, discharging, or handling operations. Avoid contact with skin and eyes. Do not ingest. Avoid breathing vapours. Use personal protective equipment as required. For more information regarding protective equipment and operational conditions see Exposure scenarios.

7.1.2 Advice on general occupational hygiene:

Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplace and should never be kept inside the pockets. Keep away from food and beverages. Do not eat, drink or smoke while using this product. Wash the hands thoroughly after handling. Change contaminated clothes at the end of working shift.

7.2 Conditions for safe storage, including any incompatibilities

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.

Before entering storage tanks and commencing any operation in a confined area check the atmosphere for oxygen content and flammability. (Subject to applicability) If sulphur compounds are suspected to be present in the product, check the atmosphere for H2S content. Store separately from oxidising agents.

Recommended and Unsuitable Materials for Storage

Recommended materials: For containers, or container linings use mild steel, stainless steel.

Unsuitable materials: some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

Container Advice

If the product is supplied in containers:

- Keep only in the original container or in a suitable container for this kind of product.
- Keep containers tightly closed and properly labelled. Protect from the sunlight.
- Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards.
- Empty containers may contain flammable product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

7.3 Specific end use(s): Not applicable

8 EXPOSURE CONTROL/PERSONAL PROTECTION

- 8.1 Control parameters:
- **8.1.1 Occupational exposure limits:** Consult local authorities for acceptable exposure limits
- 8.1.2 Additional exposure limits under the conditions of use: Not available.
- 8.1.3 DNEL/DMEL values (see table below) and PNEC-Values (none)

DNEL/DMEL Worker Consumer			Exposure route	Exposure frequency
Industry	Professional		. 0 0.00	
			Oral	Acute
				Repeated
No hazard identified for this route (data available)		No hazard identified for this route (data available)	Dermal	Acute
2.9 mg/kg/8h		1.3 mg/kg/24h		Repeated

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4300 mg/m3/15 min (for lethality) [aerosol]	2600 mg/m3/15 min (for lethality) [aerosol]	Inhalation	Acute
68 mg aerosol/m3/8h [aerosol]	20 mg aerosol/m3/24h [aerosol]		Repeated

8.2 Exposure controls

DO NOT INGEST. IF SWALLOWED THEN SEEK IMMEDIATE MEDICAL ASSISTANCE.

Please refer to Annex of eSDS for controls of each exposure scenario.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:LiquidRelative Density (20°C):max 860 kg/m³Colour:Not availableWater solubility:Almost insolubleOdour:Specific for oil productsn-Octanol/Water (logNot applicable

Po/w):

Odour threshold:Not availableAuto-ignition temperature:300 °C (572 °F)pH:Not availableDecompositionNot available

temperature:

Melting point/range (°C): -40°C to +6°C Kinematic viscosity $3.0 - 6.0 \text{ mm}^2/\text{sec.}$ at 20 °C

Boiling point/range (°C):Approx. 115.4 – 482Explosive properties:Not explosiveFlash point (°C):≥62 in closed cupOxidising properties:Not applicableEvaporation rate:Not applicablePour point:max minus 10 °C (for

temperate climatic zone).

Flammability: Not applicable Sulphur: max 0.1% Upper/lower flammability: $69 \div 119 \degree C (156.2 \div 246.2)$ Mercaptan sulphur: max 0.01%

-F)

Explosive concentration of 2 ÷3% (by volume) **Ash**: max 0.01%

vapors in air:

Vapour pressure: ~0.4 kPa at 40 °C **Acidity:** max 5 mgKOH / 100cm³

Vapour density: Not applicable

9.2 Other information:

Fat solubility(solvent- oil to be specified) etc.: Dissoluble in most organic solvents

Bulk Density: Not available
Dissociation constant in water(pKa): Not available
Oxidation-reduction Potential: Not available

10 STABILITY AND REACTIVITY

10.1 Reactivity: Stable at prescribed storage and use conditions.

10.2 Chemical stability: Under normal conditions, the product is stable. No hazardous reaction when handled and stored according to provisions.

10.3 Possibility of hazardous reactions: Under normal conditions, not hazardous reactions will occur.

10.4 Conditions to avoid: Heat, sparks, ignition points, flames, static electricity.

10.5 Incompatible materials: Strong oxidising agents.

10.6 Hazardous decomposition products: Incomplete combustion and thermolysis produces potentially toxic gases such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot.

11 TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution

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Results of experimental studies in animals provide qualitative evidence of absorption by the lung, as indicated by a modest increase in startle reflex in rats inhaling respirable aerosols of diesel fuel.

Physico-chemical considerations also suggest that highly respirable aerosols of poorly water soluble substances with a log Pow greater than zero will be absorbed to some extent from the respiratory tract. In the absence of further guidance, it will assumed that 50% of an inhaled dose of aerosolised gas oil will be absorbed by the lung in animals and humans.

The occurrence of systemic tissue changes in repeated dose toxicity studies (in the absence of dermal irritation, and after controlling for incidental ingestion during grooming) indicates that some absorption across the skin is possible. Results from the SKINPERM model indicate that uptake of gas oil across the skin is likely to be low, with an estimated dermal flux of 0.0001058 mg cm⁻². hour for human skin. However the reliability of this value is not known, and therefore complete absorption of gas oil by human skin has been assumed (conservative default) as recommended by the TGD (ECB, 2003). This is probably highly conservative given that the log Pow of the majority (>98.5%) of gas oil components falls outside the 1-4 range that favours dermal uptake (ECB, 2003). Since experimental studies demonstrate greater absorption of lipophilic substances by animal skin compared to human skin, it will be therefore be assumed during risk characterisation that animal skin is 2-fold more permeable to topically applied gas oils than is human skin.

11.2 Information on toxicological effects

Acute toxicity: Oral LD50: > 7600 mg/kg

Dermal LD50: > 4300 mg/kg Inhalation LC50: 4.1 mg/l Harmful by inhalation

Skin corrosion/Irritation: In vivo skin irritation - Irritant.

Serious eye In vivo eye irritation - Mild irritant

damage/irritation:

Skin sensitization: Not sensitising.

Germ cell mutagenicity: In vitro gene mutation study In Bacteria – Positive.

In vitro gene mutation study in mammalian cells - Positive & Ambiguous.

In vivo gene mutation – Negative.

Carcinogenicity: Carcinogenic.

Reproductive toxicity: Pre-natal developmental Toxicity Study - Negative.

Reproductive toxicity dermal NOAEL 125 mg/kg Reproductive toxicity inhalation NOAEC > 401 ppm

STOT- single exposure: May cause lung damage if swallowed

STOT-repeated exposure: May cause damage to organs through prolonged or repeated exposure. Affected

organs: blood, thymus, liver

Short-term repeat dose dermal NOAEL 0.5 ml/kg

Sub-chronic repeat dose inhalation NOAEC >1710 mg/m3

Sub-chronic repeat dose dermal NOAEL 30 mg/kg $\,$

Aspiration hazard: Classified as aspiration hazard (Xn; R65 harmful, may cause lung

damage if swallowed, according to EU DSD 67/548/EEC).

12 ECOLOGICAL INFORMATION

12.1 Toxicity:

Acute aquatic invertebrate EL50 68 mg/l

Acute aquatic algae IL50 22 mg/l

Acute aquatic fish LL50 21 mg/l

Long-term invertebrate NOEL 0.21 mg/l

Long-term fish NOEL 0.083 mg/l

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

12.2 Persistence and degradability:

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Biodegradation in water: readily biodegradable. 60 % in a 28 day test.

The substance is resistant to hydrolysis because they lack a functional group that is hydrolytically reactive.

The substance does not have the potential to undergo photolysis in water and soil, and this fate process will not contribute to a measurable degradative loss of this substance from the environment.

An evaluation of representative hydrocarbon structures indicate some structures meet the Persistent (P) or very Persistent (vP) criteria (see CONCAWE, 2010b).

12.3 Bioaccumulative potential:

An evaluation of representative hydrocarbon structures indicates no structures meet the very Bioaccumulative (vB) criterion but some structures meet the Bioaccumulative (B) criterion (see CONCAWE, 2010b).

12.4 Mobility in soil:

Not available.

12.5 Results of PBT&vPvB assessment:

The substance does not fulfil the PBT / vPvB criteria (see CONCAWE, 2010b).

12.6 Other adverse effects:

This substance may contribute to ozone formation in the near surface atmosphere. However, the photochemical formation of ozone depends on a complex interaction of other atmospheric pollutant sources and environmental conditions. Therefore, the contribution of this substance to ozone formation is outside the scope of this substance assessment and is more appropriately addressed via EU air quality directives.

13 DISPOSAL CONSIDERATIONS

Waste The recommended method is recycling or incineration at an approved installation.

disposal:

Waste The waste producer is responsible for the correct specification of the waste. The specification of the

waste classification should be in arrangement with the authorised waste disposal company. Disposal of contaminated packaging: Empty packagings may contain flammable or explosive vapours. Disposal

via an authorised waste contractor.

14 TRANSPORT INFORMATION

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO/IATA)
UN-Number:	1202	1202	1202
UN Proper shipping name:	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT
Transport hazard Class:	3	3	3
Packaging group:	III	III	III
Environmental hazards:	3 Flammable liquids. Environmentally hazardous substance mark	3 Flammable liquids. Marine pollutant mark.	3 Flammable liquids. Environmentally hazardous substance mark
Special precautions for user:	See section 2.2	See section 2.2	See section 2.2

15 REGULATORY INFORMATION

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

Relevant information regarding authorization: Not applicable Relevant information regarding restriction: Not applicable

Other EU regulations: Regulation (EU) No 453/2010

Regulation (EC) No 1272/2008

Other National regulations: Not applicable.

The Chemical Safety Assessment has been performed for the substance.

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16 OTHER INFORMATION

16.1 Indication of changes

Version 1.2 reflects a change of the Only Representative.

Version 1.1 amended by EU No 453/2010. The data was updated and is in consistency with the Chemical Safety Report provided by the Lead Registrant of the joint submission during REACH registration process. Section 3 was updated and is in consistency with the registration dossier on the substance provided by the manufacturer's Only Representative during REACH registration process.

16.2 Key sources for data

CONCAWE Chemical Safety Report prepared for Vacuum Gas Oils, Hydrocracked Gas Oils, and Distillate Fuels, 2010.

16.3 List of relevant R phrases, hazard statements, safety phrases and precautionary statements

	p. 1
Hazard Statements:	R-phrases:
H304: May be fatal if swallowed and enters airways.	R20 - harmful by inhalation
H315: Causes skin irritation.	R38 - irritating to skin
H332: Harmful if inhaled.	R40 - limited evidence of a carcinogenic effect
H351: Suspected of causing cancer.	R51/53 - toxic to aquatic organisms, may cause long-term
H373: May cause damage to organs through prolonged	adverse effects in the aquatic environment
or repeated exposure.	R65 - harmful: may cause lung damage if swallowed
H411: Toxic to aquatic life with long lasting effects.	
	S-phrases:
Precautionary Statements:	S2 - keep out of the reach of children (Applicable only
P261: Avoid breathing	when sold to the general public)
dust/fume/gas/mist/vapours/spray.	S23 - do not breathe gas/fumes/vapour/spray
P280: Wear protective gloves/protective clothing/eye	(appropriate wording to be specified by the
protection/face protection.	manufacturer)
P301+P310: IF SWALLOWED: Immediately call a POISON	S24 - avoid contact with skin
CENTER or doctor/physician.	S36/37 - wear suitable protective clothing and gloves
P331: Do NOT induce vomiting.	S51 - use only in well-ventilated areas
P332+P313: If skin irritation occurs: Get medical	S61 - avoid release to the environment. refer to special
advice/attention.	instructions/safety data sheets
P501: Dispose of contents/container to	S62 - if swallowed, do not induce vomiting: seek medical
	advice immediately and show this container or label

16.4 Acronyms, abbreviations

AC: Article category

ADR: European Agreement concerning international carriage of Dangerous goods by Road

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL: Derivative No effect Level DSD: Dangerous Substances Directive

EC: European Community
EU: European Union

EU CLP 1272/2008: Regulation (EC) No 1272/2008

EUH: European Hazard Statement GHS: Global Harmonized System

IMDG: International Maritime Dangerous Goods IATA: International Air Transport Association LD50/LC50 - Lethal Dose/Concentration kill 50%

LC50: Median lethal dose

NOAEC/NOAEL: No Observable Adverse Effect Concentration / Level OECD: Organization for Economic Co-Operation and Development

OSHA - Occupational Safety & Health Administration

PBT: Persistent, bioaccumulative, Toxic

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PC: Product Category

PEL: Permissible exposure limits

PNEC: Predicted No effect Concentration

Ppm: Part per million PROC: Process Category

eSDS: Extended Safety Data Sheet STEL: Short Term Exposure Limit

SU: Sector of Use

TWA: Time weighted average TVL: Threshold Limit Values

USEPA: United States Environmental Protection Agency

UCVB substances: Substances of Unknown or Variable Composition

vPvB: Very persistent and very bioaccumulative

WEL: Workplace Exposure Limit

WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period)

WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average)

reference period) w/w: weight by weight

16.5 Notice to reader:

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees.

This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

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Appendix 1 - Exposure Scenarios

1. Manufacture of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

Continual Exposure Congris Title Con Oile (vocuum hydrographed & distillate fuels) P20 P29					
Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53					
Title					
Manufacture of Substance					
Use Descriptor	Jse Descriptor				
Sector(s) of Use		3, 8, 9			
Process Categories		1, 2, 3, 4, 8a, 8b, 15			
Environmental Release Cate	gories	1, 4			
Specific Environmental Relea	ase Category	ESVOC SpERC 1.1.v1			
Processes, tasks, activities	covered				
Manufacture of the substance	e or use as a proces	s chemical or extraction agent. Includes recycling /			
recovery, material transfers,	storage, sampling, a	ssociated laboratory activities, maintenance and			
loading (including marine ves	sel/barge, road/rail	car and bulk container).			
Assessment Method					
See Section 3.					
Section 2 Operational cond	ditions and risk ma	nagement measures			
_					
Section 2.1 Control of wor	ker exposure				
Product characteristics					
Physical form of product	Liquid				
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.			
Concentration of substance		substance in the product up to 100 % (unless stated			
in product	differently) G13	substance in the product up to 100 % (unless stated			
Frequency and duration of		ures up to 8 hours (unless stated differently) G2			
use/exposure	Covers daily expos	ures up to 6 flours (urliess stated differently) G2			
Other Operational	Operation is carried	d out at elevated temperature (> 20°C above ambient			
Conditions affecting		Assumes a good basic standard of occupational			
exposure	hygiene is impleme				
Contributing Scenarios		agement Measures and Operating Conditions			
Contributing Scenarios	Specific Kisk Maii	agement measures and operating conditions			
General measures	Control any potenti	al exposure using measures such as contained			
applicable to all activities		designed and maintained facilities and a good standard of			
CS135		Drain down systems and transfer lines prior to breaking			
		down and flush equipment where possible prior to			
	maintenance.				
	Where there is pote	ential for exposure: Ensure relevant staff are informed of			
	exposure potential	and aware of basic actions to minimise exposures;			
	ensure suitable per	sonal protective equipment is available; clear up spills			
	and dispose of was	ste in accordance with regulatory requirements; monitor			
	effectiveness of control measures; provide regular health surveillance as				
	appropriate; identify and implement corrective actions. G25				
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect				
irritants) G19	skin contact. Wear	gloves (tested to EN374) if hand contact with			
		lean up contamination/spills as soon as they occur.			
		amination immediately. Provide basic employee			
	• .	minimise exposures and to report any skin effects			
	that may develop.				
General exposures (Closed	Handle substance	within a closed system E47			
systems) CS15					

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General exposures (Open	Wear suitable gloves tested to EN374 PPE1	5		
systems) CS16				
Process Sampling CS2	No other specific measures identified EI20			
Bulk closed loading and	Handle substance within a closed system E47 Wear suitable gloves			
unloading CS501	tested to EN374 PPE15			
Bulk open loading and	Wear suitable gloves tested to EN374 PPE1	5		
unloading CS503	But to the second of the secon			
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break	(-In or maintenance, E65.		
maintenance C539	Wear chemically resistant gloves (tested to I	EN374) in combination with		
Laboratory activities CS36	'basic' employee training. PPE16 No other specific measures identified EI20			
Bulk storage CS85	Store substance within a closed system. E84	1		
Section 2.2 Control of env		+		
	iioiiiieiitai exposure			
Product characteristics	Dr.C21 Dradominantly hydrophobia [Dr.C4a]			
Amounts used	[PrC3]. Predominantly hydrophobic [PrC4a].			
Fraction of EU tonnage used	Lin ragion	0.1		
Regional use tonnage (tonne		2.8e7		
Fraction of Regional tonnage		0.021		
Annual site tonnage (tonnes		6.0e5		
Maximum daily site tonnage		2.0e6		
Frequency and duration of		12.060		
Continuous release [FD2].	430			
Emission days (days/year)		300		
Environmental factors not	influenced by risk management			
Local freshwater dilution fact		10		
Local marine water dilution fa		100		
	nditions affecting environmental exposure			
Release fraction to air from r	process (initial release prior to RMM)	1.0e-2		
	ter from process (initial release prior to	3.0e-5		
RMM)	p (
,	process (initial release prior to RMM)	0.0001		
Technical conditions and measures at process level (source) to prevent release				
	ss sites thus conservative process release es			
	s and measures to reduce or limit discharg			
releases to soil				
	osure is driven by freshwater sediment [TCR1			
	olved substance to or recover from onsite was			
	wage treatment plant, no onsite wastewater tr			
	a typical removal efficiency of (%)	90		
	or to receiving water discharge) to provide	90.3		
the required removal efficien				
	wage treatment plant, provide the required	0		
onsite wastewater removal e				
	prevent/limit release from site	- IOMO41 - December 1		
	olved substance to or recover from wastewate			
	oils [OMS2]. Sludge should be incinerated, co	ontained or reclaimed		
[OMS3].	rolated to municipal sowage treatment plan	nt		
Conditions and measures	related to municipal sewage treatment plar	IL .		
	I form we stown to the law of	104.4		
	al from wastewater via domestic sewage	94.1		
treatment (%)	om wastewater after onsite and offsite	04.4		
TOTAL EUICIEDOV OF FEMOVAL IN	om wastewater after onsite and offsite	94.1		

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(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	3.3e6
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	10000
Conditions and massives valeted to external treatment of wests for di	

Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated to treat [ETW4].

Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated to recover [ERW2].

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Scaled assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file attached to IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. For refinery sites where scaling revealed a condition of unsafe use (i.e., RCRs > 1), a site-specific chemical safety assessment was required [DSU8]. Taking into account the findings of the air- monitoring evaluation on benzene included as the Tier 2 analysis in the Low Boiling Point Naphtha category, the default "Air Removal Efficiency" of 90 % included in the SPERC has been shown to be over-conservative and that 95 % efficiency can safely be claimed in a Tier II analysis. On this basis, the Tier 2 analysis demonstrates that no refineries have RCRs>1 (see PETRORISK file in IUCLID section 13 – "Tier 2 Site Specific Production worksheet").

Max RCR Water = 6,06E-01 Max RCR Air = 1,01E-01

2. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Intermediate – Industrial

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53				
Title	, ,			
Use as Substance as Intermediate				
Use Descriptor				
Sector(s) of Use	3 8 9			

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D		4 0 0 4 0 0 1 45			
Process Categories		1, 2, 3, 4, 8a, 8b, 15			
Environmental Release Cate		6a			
Specific Environmental Relea		ESVOC SpERC 6.1a.v1			
Processes, tasks, activities covered					
	Jse of substance as an intermediate. Includes recycling/ recovery, material transfers, storage,				
		nance and loading (including marine vessel/barge,			
road/rail car and bulk contain	er).				
Assessment Method					
See Section 3.	-1:4:				
Section 2 Operational cond	ditions and risk ma	nagement measures			
Section 2.1 Control of wor	ker exposure				
Product characteristics					
Physical form of product	Liquid				
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.			
Concentration of substance		substance in the product up to 100 % (unless stated			
in product	differently) G13				
Frequency and duration of	Covers daily expos	ures up to 8 hours (unless stated differently) G2			
use/exposure					
Other Operational		out at elevated temperature (> 20°C above ambient			
Conditions affecting		Assumes a good basic standard of occupational			
exposure	hygiene is impleme				
Contributing Scenarios	Specific Risk Man	agement Measures and Operating Conditions			
General measures		al exposure using measures such as contained			
applicable to all activities		lesigned and maintained facilities and a good standard of			
CS135	general ventilation. Drain down systems and transfer lines prior to breaking				
	down and flush equipment where possible prior to				
	maintenance.				
		ential for exposure: Ensure relevant staff are informed of			
		and aware of basic actions to minimise exposures;			
		sonal protective equipment is available; clear up spills			
		te in accordance with regulatory requirements; monitor			
		ntrol measures; provide regular health surveillance as			
Conoral magazines (alcie		y and implement corrective actions. G25			
General measures (skin		ntact with product. Identify potential areas for indirect			
irritants) G19		gloves (tested to EN374) if hand contact with ean up contamination/spills as soon as they occur.			
		mination immediately. Provide basic employee minimise exposures and to report any skin effects			
	that may develop.				
General exposures (Closed	Handle substance	within a closed system E47			
systems) CS15	Transic Substance	Maini a didda dydiain LTI			
General exposures (Open	Wear suitable glove	es tested to EN374 PPE15			
systems) CS16		SO COCOM TO ENOT THE ETO			
Process Sampling CS2 No other specific measures identified		easures identified EI20			
Bulk closed loading and		within a closed system E47 Wear suitable gloves			
unloading CS501	tested to EN374 PF				
Bulk open loading and		es tested to EN374 PPE15			
unloading CS503	3.000				
Equipment cleaning and	Drain down system	prior to equipment break-in or maintenance. E65.			
maintenance CS39	Wear chemically resistant gloves (tested to EN374) in combination with				
	'basic' employee training. PPE16				
Laboratory activities CS36		easures identified El20			

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Bulk storage CS85	Store substance within a closed system. E84			
Section 2.2 Control of e	nvironmentai exposure			
Product characteristics	00.10.001.0.1.1.1.1.1.1.1.1.1.1.1.1.1.1			
	CB [PrC3]. Predominantly hydrophobic [PrC4a].			
Amounts used		lo .		
Fraction of EU tonnage us	•	0.1		
Regional use tonnage (tor		3.5e5		
Fraction of Regional tonna		0.043		
Annual site tonnage (tonn		1.5e4		
Maximum daily site tonna		5.0e4		
Frequency and duration				
Continuous release [FD2]		loop		
Emission days (days/year		300		
	ot influenced by risk management	T		
Local freshwater dilution f		10		
Local marine water dilutio		100		
Other given operational	conditions affecting environmental exposure			
	n process (initial release prior to RMM)	1.0e-3		
Release fraction to waster RMM)	water from process (initial release prior to	3.0e-5		
Release fraction to soil fro	om process (initial release prior to RMM)	0.001		
	d measures at process level (source) to preve	ent release		
Common practices vary a	cross sites thus conservative process release es	timates used [TCS1].		
	ons and measures to reduce or limit discharg			
releases to soil		•		
Risk from environmental e	exposure is driven by freshwater sediment [TCR1	bl.		
	ssolved substance to or recover from onsite was			
	sewage treatment plant, no onsite wastewater tr			
	de a typical removal efficiency of (%)	80		
	prior to receiving water discharge) to provide	51.6		
the required removal effici				
If discharging to domestic	sewage treatment plant, provide the required	0		
onsite wastewater remova				
	to prevent/limit release from site			
	ssolved substance to or recover from wastewater	r [OMS1] Do not apply		
industrial sludge to natura [OMS3].	I soils [OMS2]. Sludge should be incinerated, co	ontained or reclaimed		
	es related to municipal sewage treatment plan	nt		
	· •			
Estimated substance remetreatment (%)	oval from wastewater via domestic sewage	94.1		
	I from wastewater after onsite and offsite	94.1		
Maximum allowable site to	onnage (M _{Safe}) based on release following total	4.1e5		
wastewater treatment rem		2000		
Conditions and massive	ge treatment plant flow (m³/d)			
	es related to external treatment of waste for di	•		
	ed during use and no waste of the substance is	generated to treat [E1W5].		
	es related to external recovery of waste			
This substance is consumed during use and no waste of the substance is generated to recover [ERW3].				
Section 3 Exposure Est	imation			
3.1. Health				

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The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) IDSU41.

Max RCR Water = 1,22E-01 Max RCR Air = 4,88E-03

3. Distribution of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

	rio Title Gas Oils (\	vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53		
Title		
Distribution of Substance		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 15
Environmental Release Cates	gories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Relea	se Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities	covered	
Bulk loading (including marine	e vessel/barge, rail/	road car and IBC loading) and repacking (including
drums and small packs) of su	bstance, including i	ts sampling, storage, unloading, maintenance and
associated laboratory activitie	es.	
Assessment Method		
See Section 3.		
Section 2 Operational cond	ditions and risk ma	inagement measures
Section 2.1 Control of work	cer exposure	
Product characteristics	•	
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	sure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage	substance in the product up to 100 % (unless stated
in product	differently) G13	

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Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless	stated differently) G2
Other Operational	Assumes use at not more than 20°C above a	mbient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic	
exposure	hygiene is implemented G1.	•
Contributing Scenarios	Specific Risk Management Measures and	Operating Conditions
3	3	-
General measures	Control any potential exposure using measure	
applicable to all activities	systems, properly designed and maintained fa	
CS135	general ventilation. Drain down systems and	
	containment. Drain down and flush equipmen	t where possible prior to
	maintenance.	and a second of the second of
	Where there is potential for exposure: Ensure	
	exposure potential and aware of basic actions ensure suitable personal protective equipment	
	and dispose of waste in accordance with regu	
	effectiveness of control measures; provide reg	
	appropriate; identify and implement corrective	
General measures (skin	Avoid direct skin contact with product. Identify	
irritants) G19	skin contact. Wear gloves (tested to EN374) i	
	substance likely. Clean up contamination/spill	
	Wash off skin contamination immediately. Pro	
	training to prevent / minimise exposures and t	to report any skin effects
Canada avasavinas (Clasad	that may develop. E3	7
General exposures (Closed systems) CS15	Handle substance within a closed system E47	
General exposures (Open	Wear suitable gloves tested to EN374 PPE15	
systems) CS16	Vocal Sultable gloves tested to ENGTATT ETC	
Process sampling CS2	No other specific measures identified El20	
Laboratory activities CS36	No other specific measures identified El20	
Bulk closed loading and	Handle substance within a closed system E47	7 Wear suitable gloves
unloading CS501	tested to EN374 PPE15	
Bulk open loading and unloading CS503	Wear suitable gloves tested to EN374 PPE15	
Drum and small pack filling	Wear suitable gloves tested to EN374 PPE15	
CS6		
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-	
maintenance CS39	Wear chemically resistant gloves (tested to El'basic' employee training. PPE16	N374) III Combination with
Storage CS67	Handle substance within a closed system. E8	4
Section 2.2 Control of envi		
Product characteristics		
	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	.	1
Fraction of EU tonnage used	<u>v</u>	0.1
Regional use tonnage (tones		2.8e7
Fraction of Regional tonnage Annual site tonnage (tonnes/		0.002 5.6e4
Maximum daily site tonnage		1.9e5
Frequency and duration of		11.000
Continuous release [FD2].		
Emission days (days/year)		300
	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)	1.0e-3
Release fraction to wastewater from process (initial release prior to	1.0e-6
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to preven	ent release
Common practices vary across sites thus conservative process release es	timates used [TCS1].
Technical onsite conditions and measures to reduce or limit discharge	ges, air emissions and
releases to soil	
Risk from environmental exposure is driven by human via indirect exposur	
[TCR1j] Prevent discharge of undissolved substance to or recover from on	site wastewater [TCR14].No
wastewater treatment required [TCR6].	T
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewate	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co	ontained or reclaimed
[OMS3].	
Conditions and measures related to municipal sewage treatment plan	nt .
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	0.0.0
Maximum allowable site tonnage (M _{Safe}) based on release following total	2.9e6
wastewater treatment removal (kg/d)	2000
Assumed domestic sewage treatment plant flow (m ³ /d) Conditions and measures related to external treatment of waste for d	2000
External treatment and disposal of waste should comply with applicable re	guiations [ETW3].
Conditions and measures related to external recovery of waste External recovery and recycling of waste should comply with applicable re-	gulations [EDW/1]
Section 3 Exposure Estimation	guiations [ERW 1].
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures u	unless otherwise indicated
G21.	แแบงง บนเซเพเจซ แนเปลเซน.
2.2 Environment	

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

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4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,99E-02 Max RCR Air = 5,29E-03

4. Formulation & (Re)packing of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

fuels) R20, R38, R40, R		
R40, R65, R51/53	rio Title Gas Oils (v	vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Formulation & (Re)packing o	f Substances and M	ixtures
Use Descriptor		
Sector(s) of Use		3, 10
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15
Environmental Release Cate		2
Specific Environmental Release		ESVOC SpERC 2.2.v1
Processes, tasks, activities		
operations, including storage extrusion, large and small sc Assessment Method	, materials transfers	ance and its mixtures in batch or continuous , mixing, tabletting, compression, pelletization, nance, sampling and associated laboratory activities
See Section 3.		
Section 2 Operational con	ditions and risk ma	nagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	sure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage differently) G13	substance in the product up to 100 % (unless stated
Frequency and duration of use/exposure	Covers daily expos	ures up to 8 hours (unless stated differently) G2
Other Operational Conditions affecting exposure	stated differently. Ghygiene is impleme	
Contributing Scenarios		agement Measures and Operating Conditions
General measures applicable to all activities CS135	properly designed a of general ventilation breaking containment prior to maintenance. Where there is potential ensure suitable per	al exposure using measures such as contained systems, and maintained facilities and a good standard on. Drain down systems and transfer lines prior to ent. Drain down and flush equipment where possible see. The ential for exposure: Ensure relevant staff are informed of and aware of basic actions to minimise exposures; as a sonal protective equipment is available; clear up spills attention accordance with regulatory requirements; monitor

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	effectiveness of control measures; provide re	
	appropriate; identify and implement corrective	
General measures (skin	Avoid direct skin contact with product. Identi	
irritants) G19	skin contact. Wear gloves (tested to EN374)	
	substance likely. Clean up contamination/sp	
	Wash off skin contamination immediately. P	
	training to prevent / minimise exposures and	to report any skin effects
	that may develop. E3	
General exposures (closed	Handle substance within a closed system E4	47
systems) CS15		_
General exposures (open	Wear suitable gloves tested to EN374 PPE1	5
systems) CS16		
Process sampling CS2	No other specific measures identified El20	
Drum and batch transfers	Use drum pumps or carefully pour from cont	
CS8	resistant gloves (tested to EN374) in combin	ation with 'basic' employee
	training PPE16	
Bulk transfers CS14	Handle substance within a closed system E	17 Wear suitable gloves
BALLY AND ALL	tested to EN374 PPE15	
Mixing operations (open	Provide extract ventilation to points where e	
systems) CS30	chemically resistant gloves (tested to EN374	i) in combination with 'basic'
	employee training PPE16	
Production or preparation	Wear suitable gloves tested to EN374 PPE1	5
or articles by tabletting,		
compression, extrusion or		
pelletisation CS100	W	
Drum and small package	Wear suitable gloves tested to EN374 PPE1	5
filling CS8		
Laboratory activities CS36	No other specific measures identified El20	
Equipment clean down and	Drain down system prior to equipment break	
maintenance CS39	Wear chemically resistant gloves (tested to I	=N374) in combination with
0007	'basic' employee training. PPE16	4
Storage CS67	Store substance within a closed system. E84	4
Section 2.2 Control of envi	ronmental exposure	
Product characteristics	[D 00] D	
	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used		0.1
Regional use tonnage (tonne		2.8e7
Fraction of Regional tonnage	•	0.0011
Annual site tonnage (tonnes/		3.0e4
Maximum daily site tonnage (1.0e5
Frequency and duration of	use	
Continuous release [FD2].		Tana
Emission days (days/year)		300
	influenced by risk management	T
Local freshwater dilution factor		10
Local marine water dilution fa		100
Other given operational con	nditions affecting environmental exposure	
Release fraction to air from p	rocess (after typical onsite RMMs,	1.0e-2
consistent with EU Solvent E	missions Directive requirements)	
Release fraction to wastewate RMM)	er from process (initial release prior to	2.0e-5
	process (initial release prior to RMM)	0.0001
	the state of the s	1

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Technical conditions and measures at process level (source) to preve	ent release
Common practices vary across sites thus conservative process release est	timates used [TCS1].
Technical onsite conditions and measures to reduce or limit discharg	es, air emissions and
releases to soil	
Risk from environmental exposure is driven by freshwater sediment [TCR1	b].
Prevent discharge of undissolved substance to or recover from onsite wast	ewater [TCR14].
If discharging to domestic sewage treatment plant, no onsite wastewater tre	eatment required [TCR9].
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide	59.9
the required removal efficiency \geq (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater	[OMS1]. Do not apply
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co	ntained or reclaimed
[OMS3].	
Conditions and measures related to municipal sewage treatment plan	t
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	6.8e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m³/d)	2000
Conditions and measures related to external treatment of waste for di	sposal
External treatment and disposal of waste should comply with applicable req	gulations [ETW3].
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable reg	gulations [ERW1].
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures up	nless otherwise indicated.
G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental	exposure with the Petrorisk

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

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Max RCR Water = 1,47E-01 Max RCR Air = 5,03E-02

5. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) in Coatings R20, R38, R40, R65, R51/53 – Industrial

	rio Title Gas Oils (\	vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53 Title		
Uses in Coatings		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15
Environmental Release Cate	gories	4
Specific Environmental Relea		ESVOC SpERC 4.3a.v1
Processes, tasks, activities		
materials receipt, storage, pro	eparation and transf dised bed on produc	es, etc) including exposures during use (including er from bulk and semi-bulk, application by spray, ction lines and film formation) and equipment activities.
Assessment Method	•	
See Section 3.		
Section 2 Operational con-	ditions and risk ma	nagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics	_	
Physical form of product	Liquid	
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.
Concentration of substance		substance in the product up to 100 % (unless stated
in product	differently) G13	
Frequency and duration of use/exposure	Covers daily expos	ures up to 8 hours (unless stated differently) G2
Other Operational Conditions affecting exposure		t more than 20°C above ambient temperature, unless 315. Assumes a good basic standard of occupational ented G1
Contributing Scenarios		agement Measures and Operating Conditions
General measures applicable to all activities CS135	properly designed a of general ventilation breaking containment prior to maintenance. Where there is potential ensure suitable per and dispose of was effectiveness of colappropriate; identification.	ential for exposure: Ensure relevant staff are informed of and aware of basic actions to minimise exposures; sonal protective equipment is available; clear up spills attein accordance with regulatory requirements; monitor introl measures; provide regular health surveillance as and implement corrective actions. G25
General measures (skin irritants) G19	skin contact. Wear substance likely. Cl Wash off skin conta	ontact with product. Identify potential areas for indirect gloves (tested to EN374) if hand contact with lean up contamination/spills as soon as they occur. Amination immediately. Provide basic employee of minimise exposures and to report any skin effects

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	that may develop. E3 Other skin protection me	
	suits and face shields may be required during	
	which are likely to lead to substantial aerosol r	
General exposures (closed systems) CS15	Handle substance within a closed system E47	
Bulk transfers CS14	Handle substance within a closed system E47	Wear suitable gloves
	tested to EN374 PPE15	
Material transfers;	Wear suitable gloves tested to EN374 PPE15	
Drum/batch transfers;		
Transfer from/pouring from		
containers CS3, CS8, CS22		
Preparation of material for	Wear chemically resistant gloves (tested to EN	(1374) in combination with
application; Mixing	'basic' employee training. PPE16	
operations (open systems)		
CS96, CS30 Film formation - force	Handle substance within a closed system F 17	Dravida a good standard of
drying, stoving and other	Handle substance within a closed system E47 general ventilation (not less than 3 to 5 air cha	
technologies CS99		
Film formation - air drying	Provide a good standard of general ventilation	
CS95	changes per hour) E11.Wear suitable gloves t	
Spraying	Minimise exposure by partial enclosure of the	
(automatic/robotic) CS97	provide extract ventilation at openings E60 We	
	EN374 PPE15. Provide a good standard of ger 3 to 5 air changes per hour) E11	ierai veniliation (not less than
Manual spraying CS24	Wear a respirator conforming to EN140 with T	νρο Λ/D2 filter or better
Maridai Spraying C324	PPE29 Wear chemically resistant gloves (teste	
	combination with specific activity training PPE	
	trained to minimise exposures EI19 Provide a	
	ventilation (not less than 3 to 5 air changes pe	
Roller, spreader, flow	Wear chemically resistant gloves (tested to EN	N374) in combination with
application. CS69	specific activity training PPE17	,
Dipping, immersion and	Wear suitable gloves tested to EN374 PPE15	
pouring. CS4	-	
Production of preparations	No other specific measures identified El20	
or articles by tabletting,		
compression, extrusion,		
pelletisation CS100		
Laboratory activities CS36	No other specific measures identified El20	
Equipment clean down and	Drain down system prior to equipment break-in	
maintenance CS39	Wear chemically resistant gloves (tested to EN	1374) in combination with
Characa CCC7	'basic' employee training. PPE16	1
Storage CS67 Section 2.2 Control of envi	Handle substance within a closed system. E84	•
	Torrinerital exposure	
Product characteristics	[DrC2] Dradaminanthy by drank abia [DrC4a]	
Amounts used	[PrC3]. Predominantly hydrophobic [PrC4a].	
	in ragion	0.1
Fraction of EU tonnage used Regional use tonnage (tonne	iii iegiuii e/vear)	0.1 8.1e3
Fraction of Regional tonnage		1
Annual site tonnage (tonnes/		8.1e3
Maximum daily site tonnage		2.7e4
Frequency and duration of		o T
Continuous release [FD2].		
Emission days (days/year)		300
	influenced by risk management	

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Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.98
Release fraction to wastewater from process (initial release prior to RMM)	7.0e-5
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to preven	ent release
Common practices vary across sites thus conservative process release es	
Technical onsite conditions and measures to reduce or limit discharge	
releases to soil	, ,
Risk from environmental exposure is driven by humans via indirect exposu	re (primarily inhalation)
[TCR1b].	те (р. т. т.
Prevent discharge of undissolved substance to or recover from onsite was	tewater [TCR14].
If discharging to domestic sewage treatment plant, no onsite wastewater tr	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide	58.2
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewate	r [OMS1]. Do not apply
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co	
Conditions and measures related to municipal sewage treatment plar	nt
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	04.1
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	0
Maximum allowable site tonnage (M _{Safe}) based on release following total	1.4e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for d	
External treatment and disposal of waste should comply with applicable re	•
Conditions and measures related to external recovery of waste	<u> </u>
External recovery and recycling of waste should comply with applicable re-	gulations [ERW1].
Additional information on the basis for the allocation of the indentifie	
contained in PETRORISK file.	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures u	inless otherwise indicated.
loot	

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

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Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 1,41E-01 Max RCR Air = 1,32E-01

6. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Coatings – Professional

Section 1 Exposure Scena R40, R65, R51/53	rio Title Gas Oils (v	vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Uses in Coatings		
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19
Environmental Release Categories		8a, 8d
Specific Environmental Relea		ESVOC SpERC 8.3b.v1
Processes, tasks, activities		
materials receipt, storage, pro roller, brush, spreader by har maintenance and associated	eparation and transf nd or similar method	es, etc) including exposures during use (including er from bulk and semi-bulk, application by spray, s, and film formation), and equipment cleaning,
Assessment Method		
See Section 3.		
Section 2 Operational cond	ditions and risk ma	nagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	sure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage differently) G13	substance in the product up to 100 % (unless stated
Frequency and duration of use/exposure		ures up to 8 hours (unless stated differently) G2
Other Operational Conditions affecting exposure		t more than 20°C above ambient temperature, unless 615. Assumes a good basic standard of occupational ented G1.
Contributing Scenarios		agement Measures and Operating Conditions
General measures applicable to all activities CS135	properly designed a of general ventilation	al exposure using measures such as contained systems, and maintained facilities and a good standard on. Drain down systems and transfer lines prior to ent. Drain down and flush equipment where possible

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General measures (skin irritants) G19	prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25 Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 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. E4
General exposures (closed	Handle substance within a closed system E47
systems) CS15	
Filling / preparation of equipment from drums or containers CS45	Wear suitable gloves tested to EN374 PPE15
Material transfers, Pumped Drum/batch transfers CS3, CS8	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Preparation of material for application; Mixing operations (closed systems) CS96, CS29	No other specific measures identified El20
Preparation of material for application, mixing operations (open systems) CS66,CS30	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Film formation - air drying CS95	Wear suitable gloves tested to EN374 PPE15
Manual spraying, indoor CS24, OC8	Carry out in a vented booth or extracted enclosure E57 Wear suitable gloves tested to EN374 PPE15 Limit the substance content in the product to 25 % OC18 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11
Manual spraying, outdoor CS24, OC9	Wear a respirator conforming to EN140 with Type A/P2 filter or better. PPE29 Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17 Limit the substance content in the product to 25 % OC18 Avoid carrying out activities involving exposure for more than 4 hours OC28 Ensure operatives are trained to minimise exposures EI19
Roller, spreader, flow application CS69	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16 Limit the substance content in the product to 25 % OC18
Dipping, immersion and pouring CS4	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16.
Hand application - fingerpaints, pastels, adhesives CS72	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17 Limit the substance content in the product to 5 % OC17
Laboratory activities CS36	No other specific measures identified El20
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to type EN374) in combination with basic employee training PPE16

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Storage CS67 Store substance within a closed system E84	
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.3e3
Fraction of Regional tonnage used locally	0.0005
Annual site tonnage (tonnes/year)	1.2
Maximum daily site tonnage (kg/day)	3.2
Frequency and duration of use	
Continuous release [FD2].	
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)	0.98
Release fraction to wastewater from process (initial release prior to	0.01
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.01
Technical conditions and measures at process level (source) to preven	
Common practices vary across sites thus conservative process release est	
Technical onsite conditions and measures to reduce or limit discharg	
releases to soil	
	io (pinnani) ingoodoni
[TCR1j].	re (primarily ingestion)
No wastewater treatment required [TCR6].	
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%)	N/A
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide	
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	N/A 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required	N/A
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%)	N/A 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site	N/A 0 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	N/A 0 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3].	N/A 0 0 cinerated, contained or
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	N/A 0 0 cinerated, contained or
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan	N/A 0 0 cinerated, contained or
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage	N/A 0 0 cinerated, contained or
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%)	N/A 0 0 cinerated, contained or t
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite	N/A 0 0 cinerated, contained or
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	N/A 0 0 cinerated, contained or t 94.1 94.1
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total	N/A 0 0 cinerated, contained or t
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d)	N/A 0 0 cinerated, contained or t 94.1 94.1 5.0e1
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d)	N/A 0 0 cinerated, contained or t 94.1 94.1 5.0e1
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di	N/A 0 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di External treatment and disposal of waste should comply with applicable reg	N/A 0 0
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plan Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di External treatment and disposal of waste should comply with applicable reg	N/A 0 0 cinerated, contained or t 94.1 94.1 5.0e1 2000 sposal gulations [ETW3].
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plant Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di External treatment and disposal of waste should comply with applicable reg Conditions and measures related to external recovery of waste	N/A 0 0 cinerated, contained or t 94.1 94.1 5.0e1 2000 sposal gulations [ETW3].
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plant Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di External treatment and disposal of waste should comply with applicable reg Conditions and measures related to external recovery of waste External recovery and recycling of waste should comply with applicable reg Section 3 Exposure Estimation	N/A 0 0 ncinerated, contained or t 94.1 94.1 5.0e1 2000 sposal gulations [ETW3].
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plant Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) Conditions and measures related to external treatment of waste for di External treatment and disposal of waste should comply with applicable reg Conditions and measures related to external recovery of waste	N/A 0 0 cinerated, contained or t 94.1 94.1 5.0e1 2000 sposal gulations [ETW3].

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G21

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,98E-02 Max RCR Air = 4,35E-03

7. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Industrial

Section 1 Exposure Scenar R40, R65, R51/53	rio Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Use in Oil and Gas Field Drill	ing and Production	Operations
Use Descriptor	_	
Sector(s) of Use		3
Process Categories		1, 2, 3, 4, 8a, 8b
Environmental Release Categories		4
Specific Environmental Release Category		Qualitative assessment
Processes, tasks, activities	covered	
		cluding drilling muds and well cleaning) including operations, shaker room activities and related
See Section 3.		
Section 2 Operational cond	ditions and risk ma	nagement measures
Section 2.1 Control of work	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	

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in product	differently) G13	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless	
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25	
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect	
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3	
Bulk transfers CS14	Transfer via enclosed lines E52	
Filling / preparation of equipment from drums or containers. CS45	Wear suitable gloves tested to EN374 PPE15.	
Drilling mud (re-) formulation. CS115	No other specific measures identified El20	
Drill floor operations CS116	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16	
Operation of solids filtering equipment CS117 Elevated temperature CS111	Provide the operation with a properly sited receiving hood E71.	
Cleaning of solids filtering equipment CS120	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16	
Cuttings treatment and disposal CS515	Provide extract ventilation to points where emissions occur E54	
Sample collection CS2	No other specific measures identified EI20	
General exposures (closed systems) CS15	Handle substance within a closed system E47	
General exposures (open	Wear chemically resistant gloves (tested to EN374) in combination with	
systems) CS16	'basic' employee training PPE16	
Pouring from small containers CS9	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16	
Equipment cleaning and maintenance CS39	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16	
Storage CS67	Store substance within a closed system. E84	
Section 2.2 Control of envi	ironmental exposure	
Product characteristics		
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		

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Fraction of EU tonnage used in region [A1]	1	
Regional use tonnage (tonnes/year) [A2]	7.75E+03	
Fraction of Regional tonnage used locally [A3]	Not Applicable	
Annual site tonnage (tonnes/year) [A5]	Not Applicable	
Maximum daily site tonnage (kg/day) [A4]	Not Applicable	
Frequency and duration of use		
Emission days (days/year) [FD4]	Not Applicable	
Environmental factors not influenced by risk management		
Local marine water dilution factor [EF2]	Not Applicable	
Other given operational conditions affecting environmental exposure		
Release fraction to air from process (initial release prior to RMM) [OOC4]	Not Applicable	
Release fraction to wastewater from process (initial release prior to RMM) [OOC5]	Not Applicable	
Technical conditions and measures at process level (source) to preve	ent release	
Discharge to aquatic environment is restricted (see Section 4.2).		
Technical onsite conditions and measures to reduce or limit discharg	es, air emissions and	
releases to soil		
Not Applicable		
Treat air emission to provide a typical removal efficiency of (%) [TCR7]	Not Applicable	
Treat onsite wastewater (prior to receiving water discharge) to provide	Not Applicable	
the required removal efficiency ≥ (%)		
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	Not Applicable	
Organisation measures to prevent/limit release from site		
Prevent environmental discharge consistent with regulatory requirements.		
Conditions and measures related to municipal sewage treatment plan	t	
Estimated substance removal from wastewater via domestic sewage treatment (%)	Not Applicable	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	Not Applicable	
Maximum allowable site tonnage (M _{Safe}) based on domestic sewage treatment release (kg/d)	Not Applicable	
Assumed domestic sewage treatment plant flow (m³/d)	Not Applicable	
Conditions and measures related to external treatment of waste for di	sposal	
External treatment and disposal of waste should comply with applicable loc	cal and/or national	
regulations.		
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable loc	al and/or national	
regulations.		
Conditions and measures related to external treatment of waste for disposal		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures un	nless otherwise indicated.	
004		

3.2. Environment

Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

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Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Discharge to aquatic environment is restricted by law and industry prohibits release. 1

¹OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations in 2007, including the assessment of data reported in 2006 and 2007.

8. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Professional

R51/53 in Oil and Gas Field Drilling and Production Operations – Professional			
Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53			
Title			
Use in Oil and Gas Field Drill	Use in Oil and Gas Field Drilling and Production Operations		
Use Descriptor			
Sector(s) of Use	of Use 22		
Process Categories		1, 2, 3, 4, 8a, 8b	
Environmental Release Cate		8d	
Specific Environmental Release Category		Qualitative assessment	
Processes, tasks, activities			
site formulation, well head op		muds and well cleaning) including material transfers, on- om activities and related maintenance.	
Assessment Method			
See Section 3.			
Section 2 Operational cond	ditions and risk ma	nagement measures	
Section 2.1 Control of worl	ker exposure		
Product characteristics			
Physical form of product	Liquid	Liquid	
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.		
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Man	agement Measures and Operating Conditions	
General measures	Control any potential exposure using measures such as contained		
applicable to all activities	systems, properly designed and maintained facilities and a good standard of		
CS135	general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to		
	maintenance.		
	Where there is potential for exposure: Ensure relevant staff are informed of		
	exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills		
		ste in accordance with regulatory requirements; monitor	
	Jana dispose of was	no in accordance with regulatory requirements, monitor	

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	effectiveness of control measures; provide re		
	appropriate; identify and implement corrective actions. G25		
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect		
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with		
,	substance likely. Clean up contamination/spills as soon as they occur.		
	Wash off skin contamination immediately. Pr		
	training to prevent / minimise exposures and		
	that may develop. E3	to report any skin cheets	
Bulk transfers CS14	Wear suitable gloves tested to EN374 PPE1	E	
	Wear suitable gloves tested to EN374 PPE1		
Filling / preparation of	Wear suitable gloves tested to EN374 PPET	5	
equipment from drums or			
containers. CS45			
Drilling mud (re-)	No other specific measures identified El20		
formulation. CS115			
Drill floor operations CS116	Wear chemically resistant gloves (tested to E	EN374) in combination with	
·	'basic' employee training PPE16	•	
Operation of solids filtering	Provide the operation with a properly sited re	eceiving hood E71.	
equipment CS117 Elevated			
temperature CS111			
Cleaning of solids filtering	Wear chemically resistant gloves (tested to E	ENI274) in combination with	
		ins74) in combination with	
equipment CS120	'basic' employee training PPE16		
Cuttings treatment and	Provide extract ventilation to points where er	missions occur E54	
disposal CS515			
Sample collection CS2	No other specific measures identified El20		
General exposures (closed	Handle substance within a closed system E4	17	
systems) CS15	·		
General exposures (open	Wear chemically resistant gloves (tested to E	N374) in combination with	
systems) CS16	'basic' employee training PPE16		
Pouring from small	Wear chemically resistant gloves (tested to EN374) in combination with		
containers CS9	'basic' employee training. PPE16		
Equipment cleaning and	Wear chemically resistant gloves (tested to EN374) in combination with		
maintenance CS39	'basic' employee training. PPE16		
Storage CS67	Store substance within a closed system. E84	 	
Section 2.2 Control of env	ironmental exposure		
Product characteristics			
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used			
Fraction of EU tonnage used in region [A1]		1	
Regional use tonnage (tonnes/year) [A2]		7.75E+03	
Fraction of Regional tonnage used locally [A3]		Not Applicable	
Annual site tonnage (tonnes/year) [A5]		Not Applicable	
Maximum daily site tonnage (kg/day) [A4] Not Applicable			
Frequency and duration of	use		
Emission days (days/year) [F	TD41	Not Applicable	
Environmental factors not influenced by risk management			
Local marine water dilution factor [EF2] Not Applicable			
Other given operational co	nditions affecting environmental exposure		
Release fraction to air from p	rocess (initial release prior to RMM)	Not Applicable	
[OOC4]			
<u> </u>	er from process (initial release prior to	Not Applicable	
RMM) [OOC5]	,	11 75	
	neasures at process level (source) to preve	ant release	
recimical conditions and n	incasares at process level (source) to preve	JIL I GIGAJG	

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Discharge to aquatic environment is restricted (see Section 4.2).	
Technical onsite conditions and measures to reduce or limit dischar	rges, air emissions and
eleases to soil	
Not Applicable	
Freat air emission to provide a typical removal efficiency of (%) [TCR7]	Not Applicable
Freat onsite wastewater (prior to receiving water discharge) to provide	Not Applicable
he required removal efficiency ≥ (%)	
f discharging to domestic sewage treatment plant, provide the required	Not Applicable
onsite wastewater removal efficiency of \geq (%)	
Organisation measures to prevent/limit release from site	
Prevent environmental discharge consistent with regulatory requirements	
Conditions and measures related to municipal sewage treatment pla	ant
Estimated substance removal from wastewater via domestic sewage	Not Applicable
reatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	Not Applicable
domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on domestic sewage	Not Applicable
reatment release (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	Not Applicable
Conditions and measures related to external treatment of waste for	•
External treatment and disposal of waste should comply with applicable le	ocal and/or national
egulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable to	ocal and/or national
egulations.	
Conditions and measures related to external treatment of waste for	disposal
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated.
<u>321.</u>	
3.2. Environment	
Quantitative exposure and risk assessment not possible due to lack of en	nissions to aquatic
environment. Qualitative approach used to conclude safe use. Section 4 Guidance to check compliance with the Exposure Scenar	

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Discharge to aquatic environment is restricted by law and industry prohibits release. 1

¹OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations in 2007, including the assessment of data reported in 2006 and 2007.

9. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Industrial

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38,

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R40, R65, R51/53				
Title				
Lubricants				
Use Descriptor				
Sector(s) of Use		3		
Process Categories		1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18		
Environmental Release Cate	nories	4, 7		
Specific Environmental Release		ESVOC SpERC 4.6a.v1		
		L3 VOC SPLING 4.0a.VI		
	Processes, tasks, activities covered			
Covers the use of formulated lubricants in closed and open systems including material transfers operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment				
maintenance and disposal of		similar articles, reworking on reject articles, equipment		
Assessment Method	wasies.			
See Section 3.				
Section 2 Operational con	ditions and risk ma	anagement measures		
Section 2 Operational con	uitions and risk ma	magement measures		
Section 2.1 Control of wor	ker exposure			
Product characteristics				
Physical form of product	Liquid			
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.		
Concentration of substance	Covers percentage	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13			
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2			
use/exposure				
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless			
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational			
exposure	hygiene is implemented G1.			
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions			
General measures	Control any potential exposure using measures such as contained systems,			
applicable to all activities	properly designed and maintained facilities and a good standard			
CS135	of general ventilation. Drain down systems and transfer lines prior to			
		ent. Drain down and flush equipment where possible		
	prior to maintenand			
		Where there is potential for exposure: Ensure relevant staff are informed of		
		and aware of basic actions to minimise exposures;		
		rsonal protective equipment is available; clear up spills		
		ste in accordance with regulatory requirements; monitor		
	effectiveness of control measures; provide regular health surveillance as			
		y and implement corrective actions. G25		
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect			
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with			
'	substance likely. C			
,		lean up contamination/spills as soon as they occur.		
,	Wash off skin conta	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee		
,	Wash off skin conta training to prevent	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects		
	Wash off skin conta training to prevent that may develop.	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious		
	Wash off skin conta training to prevent that may develop. I suits and face shie	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious lds may be required during high dispersion activities		
, and the second	Wash off skin conta training to prevent that may develop. I suits and face shie which are likely to I	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious		
General exposures (Closed	Wash off skin conta training to prevent that may develop. I suits and face shie which are likely to I	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious lds may be required during high dispersion activities lead to substantial aerosol release, e.g. spraying. E4		
General exposures (Closed systems) CS15	Wash off skin conta training to prevent that may develop. I suits and face shie which are likely to I Handle substance	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious lds may be required during high dispersion activities lead to substantial aerosol release, e.g. spraying. E4 within a closed system E47.		
General exposures (Closed systems) CS15 General exposures (Open	Wash off skin conta training to prevent that may develop. I suits and face shie which are likely to I Handle substance	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious lds may be required during high dispersion activities lead to substantial aerosol release, e.g. spraying. E4		
General exposures (Closed systems) CS15	Wash off skin conta training to prevent that may develop. I suits and face shie which are likely to I Handle substance Provide extract ver	lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3 Other skin protection measures such as impervious lds may be required during high dispersion activities lead to substantial aerosol release, e.g. spraying. E4 within a closed system E47.		

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leur a c	Total		
Filling preparation of	Wear gloves tested to EN374 PPE15		
equipment from drums or			
containers CS45	Managaritable plants to to die ENOZA DDE	4.5	
Initial factory fill of	Wear suitable gloves tested to EN374 PPE	15	
equipment CS75	Duranida antigat contilation to points out one	unicaione a seus EEA Destrict	
Operation and lubrication of	Provide extract ventilation to points where	emissions occur E54 Restrict	
high energy open	area of openings to equipment E68		
equipment CS17	Mean quitable gloves tested to EN274 with	an acific ampleyes training	
Manual roller application or	Wear suitable gloves tested to EN374 with specific employee training PPE17		
brushing CS13 Treatment of articles by	Wear chemically resistant gloves (tested to	EN374) DDE15	
dipping and pouring CS35	Wear chemically resistant gloves (tested to	ENST4) FFETS	
Spraying CS10	Minimise exposure by enclosing the operati	on or equipment and provide	
Spraying CS10	extract ventilation at openings E60 Wear su		
	coveralls and eye protection PPE23	iliable gloves lested to £14574,	
Maintenance (of larger	Ensure material transfers are under contain	ment or extract ventilation	
plant items) and machine	E66 Provide extract ventilation to emission		
set up CS77	warm (>50oC) lubricant is likely E67 Wears		
	EN374 PPE15	sanasio giovos tostos to	
Maintenance of small items	Wear chemically resistant gloves (tested to	EN374) in combination with	
CS18	'basic' employee training PPE16	,	
Re-manufacture of reject	Wear chemically resistant gloves (tested to	EN374) in combination with	
articles CS19	'basic' employee training PPE16	,	
Storage CS67	Store substance within a closed system. E8	34	
Section 2.2 Control of env	ronmental exposure		
Product characteristics			
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a		
Amounts used			
Fraction of EU tonnage used	in region	0.1	
Regional use tonnage (tonnes/year)		2.7e4	
	action of Regional tonnage used locally 0.0036		
Annual site tonnage (tonnes/year)		1.0e2	
Maximum daily site tonnage		5.0e3	
Frequency and duration of	use		
Continuous release [FD2].			
Emission days (days/year)		20	
Environmental factors not	influenced by risk management		
Local freshwater dilution fact		10	
Local marine water dilution fa		100	
Other given operational co	nditions affecting environmental exposur	<u>e</u>	
Release fraction to air from p	5.0e-3		
Release fraction to wastewater from process (initial release prior to 3.0e-6			
RMM)			
Release fraction to soil from process (initial release prior to RMM) 0.001			
	neasures at process level (source) to prev		
	ss sites thus conservative process release e		
Technical onsite conditions releases to soil	s and measures to reduce or limit dischar	ges, air emissions and	
Risk from environmental exp	osure is driven by humans via indirect expos	ure (primarily ingestion)	
[TCR1j].	•	· - ·	
No wastewater treatment req		L	
Treat air emission to provide	a typical removal efficiency of (%)	70	

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Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	1
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater	[OMS1]. Do not apply
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co	ntained or reclaimed
[OMS3].	
Conditions and measures related to municipal sewage treatment plan	t
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	7.8e4
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for di	sposal
External treatment and disposal of waste should comply with applicable reg	gulations [ETW3].
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable reg	julations [ERW1].
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures un	nless otherwise indicated.
G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental	exposure with the Petrorisk
model (EE2)	

model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,98E-02 Max RCR Air = 4.37E-03

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R40, R65, R51/53	rio Title Gas Oils (v	vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Lubricants – Professional: Lo	w Environmental Re	elease
Use Descriptor		
Sector(s) of Use	22	
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 13, 17, 20
Environmental Release Cate	gories	9a, 9b
Specific Environmental Relea	ase Category	ESVOC SpERC 9.6b.v1
Processes, tasks, activities	covered	·
Covers the use of formulated	lubricants in closed	and open systems including material transfers
		les, reworking on reject articles, equipment
maintenance and disposal of		
Assessment Method		
See Section 3.		
Section 2 Operational con-	ditions and risk ma	nagement measures
•		
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage	substance in the product up to 100 % (unless stated
in product		substance in the product up to 100 % (unless stated
Frequency and duration of	differently) G13 Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		,
Other Operational		t more than 20°C above ambient temperature, unless
Conditions affecting		15. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Man	agement Measures and Operating Conditions
General measures		al exposure using measures such as contained systems,
applicable to all activities		and maintained facilities and a good standard
CS135		on. Drain down systems and transfer lines prior to
		ent. Drain down and flush equipment where possible
	prior to maintenance	
		ential for exposure: Ensure relevant staff are informed of
		and aware of basic actions to minimise exposures;
		sonal protective equipment is available; clear up spills
		te in accordance with regulatory requirements; monitor
		ntrol measures; provide regular health surveillance as
Conoral magazinas (alcia		y and implement corrective actions. G25
General measures (skin		ontact with product. Identify potential areas for indirect
irritants) G19		gloves (tested to EN374) if hand contact with
		lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee
		minimise exposures and to report any skin effects
		E3 Other skin protection measures such as impervious
		ds may be required during high dispersion activities
		ead to substantial aerosol release, e.g. spraying. E4
General exposures (Closed		within a closed system E47 PPE15
systems) CS15		,
Operation of equipment	No other specific m	easures identified El20
containing engine oils and		
similar CS26		

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General exposures (Open	Provide a good standard of controlled ventilati	ion (10 to 15 air changes
systems) CS16	per hour) E40 Wear suitable gloves tested to	`
Bulk transfers CS14	Wear suitable gloves tested to EN374 PPE15	
Built transfers CC14	involving exposure for more than 4 hours OC2	
Filling preparation of	Use drum pumps or carefully pour from contain	
equipment from drums or	gloves tested to EN374 PPE15	
containers CS45; dedicated		
facility CS81		
Filling preparation of	Wear chemically resistant gloves (tested to El	N374) in combination with
equipment from drums or	'basic' employee training. PPE16	
containers CS45; non-		
dedicated facility CS82 Operation and lubrication of	Miniming averagure by partial analogure of the	aparation or aguinment and
high energy open	Minimise exposure by partial enclosure of the provide extract ventilation at openings E60 Pr	
equipment CS17 Indoor	general ventilation (not less than 3 to 5 air cha	
OC8		anges per nour) ETT
Operation and lubrication of	Ensure operation is undertaken outdoors E69	Avoid carrying out activities
high energy open	involving exposure for more than 4 hours OC2	
equipment CS17 Outdoor	content in the product to 25 % OC18 Wear su	
OC9	EN374 PPE15 Ensure operatives are trained	
Maintenance (of larger	Ensure material transfers are under containme	ent or extract ventilation
plant items) and machine	E66 Provide extract ventilation to emission po	
set up CS77	warm (>50oC) lubricant is likely E67 Wear sui	table gloves tested to
	EN374 PPE15	
Maintenance of small items	Drain or remove substance from equipment pr	
CS18	E81 Provide a good standard of general ventil	
	than 3 to 5 air changes per hour) E11 Wear cl	
Engine lubricant service	(tested to EN374) in combination with 'basic' elements with the second combination wit	
CS78	'basic' employee training PPE16	1374) III Combination with
Manual roller application or	Wear chemically resistant gloves (tested to EN	N374) in combination with
brushing CS13	specific activity training. PPE17	,
Spraying CS10 with local	Minimise exposure by enclosing the operation	or equipment and provide
exhaust ventilation CS109	extract ventilation at openings E60 Provide a	
	ventilation (not less than 3 to 5 air changes pe	
	chemically resistant gloves (tested to EN374)	
	employee training PPE16 Ensure operatives a	are trained to minimise
Connection of COAO with and	exposures EI19	AO with Toma A/DO filters an
Spraying CS10 without local exhaust ventilation	Wear a full face respirator conforming to EN14 better. PPE32. Wear chemically resistant gloves	
CS110	combination with intensive management supe	
03110	Limit the substance content in the product to 2	
	out activities involving exposure for more than	, 0
Treatment of articles by	Wear suitable gloves tested to EN374 PPE15	
dipping and pouring CS35	g	
Storage CS67	Store substance within a closed system E84	
Section 2.2 Control of envi	ronmental exposure	
Product characteristics		
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used		0.1
Regional use tonnage (tonne		3.2e3
Fraction of Regional tonnage		0.0005
Annual site tonnage (tonnes/		1.6
Maximum daily site tonnage (kg/day) 4.4		4.4

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<u> </u>	
Frequency and duration of use	
Continuous release [FD2].	T
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	1
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to	0.01
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.01
Technical conditions and measures at process level (source) to preven	ent release
Common practices vary across sites thus conservative process release es	
Technical onsite conditions and measures to reduce or limit discharge	
releases to soil	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Risk from environmental exposure is driven by humans via indirect exposu	re (primarily ingestion)
[TCR1j].	, ,
No wastewater treatment required [TCR6].	
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	ncinerated, contained or
reclaimed [OMS3].	10110.4.04, 00114
Conditions and measures related to municipal sewage treatment plar	nt
	•
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	94.1
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage (M _{Safe}) based on release following total	6.8e1
wastewater treatment removal (kg/d)	0.001
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for d	
External treatment and disposal of waste should comply with applicable re	
Conditions and measures related to external recovery of waste	guiations [E i vvoj.
External recovery and recycling of waste should comply with applicable re	aulations [ERW1]
Section 3 Exposure Estimation	guiations [Lixvvi].
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures u	unloss otherwise indicated
G21.	illiess ullerwise mulcaleu.
3.2. Environment	
The Hall seed on Divid Mathed Land on the color later as 'consental	1

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

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Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,98E-02 Max RCR Air = 4,35E-03

11. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Professional: High Environmental Release

Section 1 Exposure Scena R40, R65, R51/53	rio Title Gas Oils (v	vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Lubricants – Professional: Hi	gh Environmental Ro	elease
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 13, 17, 20
Environmental Release Cate	gories	8a, 8d
Specific Environmental Relea		ESVOC SpERC 8.6c.v1
Processes, tasks, activities	covered	
Covers the use of formulated	lubricants in closed	and open systems including material transfers
		les, reworking on reject articles, equipment
maintenance and disposal of	waste oil.	
Assessment Method		
See Section 3.		
Section 2 Operational cond	ditions and risk ma	nagement measures
Section 2.1 Control of world	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Other Operational	Assumes use at no	t more than 20°C above ambient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Man	agement Measures and Operating Conditions
General measures		al exposure using measures such as contained systems,
applicable to all activities		and maintained facilities and a good standard
CS135		on. Drain down systems and transfer lines prior to
	breaking containments prior to maintenance	ent. Drain down and flush equipment where possible e.
	Where there is pote	ential for exposure: Ensure relevant staff are informed of

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	exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 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. E4
General exposures (Closed systems) CS15	Handle substance within a closed system E47 PPE15
Operation of equipment containing engine oils and similar CS26	No other specific measures identified EI20
General exposures (Open systems) CS16	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) E40 Wear suitable gloves tested to EN374 PPE15
Bulk transfers CS14	Wear suitable gloves tested to EN374 PPE15 Avoid carrying out activities involving exposure for more than 4 hours OC28
Filling preparation of equipment from drums or containers CS45; dedicated facility CS81	Use drum pumps or carefully pour from container E64 Wear suitable gloves tested to EN374 PPE15
Filling preparation of equipment from drums or containers CS45; non-dedicated facility CS82	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Operation and lubrication of high energy open equipment CS17 Indoor OC8	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11
Operation and lubrication of high energy open equipment CS17 Outdoor OC9	Ensure operation is undertaken outdoors E69 Avoid carrying out activities involving exposure for more than 4 hours OC28 Limit the substance content in the product to 25 % OC18 Wear suitable gloves tested to EN374 PPE15 Ensure operatives are trained to minimise exposures EI19
Maintenance (of larger plant items) and machine set up CS77	Ensure material transfers are under containment or extract ventilation E66 Provide extract ventilation to emission points when contact with warm (>50oC) lubricant is likely) E67 Wear suitable gloves tested to EN374 PPE15
Maintenance of small items CS18	Drain or remove substance from equipment prior to break-in or maintenance E81 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Engine lubricant service CS78	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Manual roller application or brushing CS13	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17
Spraying CS10	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16 Ensure operatives are trained to minimise

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	exposures EI19	
	If technical measures not practical: G16	
	Wear a full face respirator conforming to EN1	
	better. PPE32. Wear chemically resistant glo	
	combination with intensive management sup-	
	Limit the substance content in the product to out activities involving exposure for more tha	
Treatment of articles by	Wear suitable gloves tested to EN374 PPE1	5
dipping and pouring CS35	-	
Storage CS67	Store substance within a closed system E84	
Section 2.2 Control of envi	ronmental exposure	
Product characteristics		
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used	in region	0.1
Regional use tonnage (tonne	s/year)	3.2e3
Fraction of Regional tonnage		0.0005
Annual site tonnage (tonnes/		1.6
Maximum daily site tonnage (4.4
Frequency and duration of		
Continuous release [FD2].		
Emission days (days/year)		365
	influenced by risk management	
Local freshwater dilution factor		10
Local marine water dilution fa	actor	100
	nditions affecting environmental exposure	
<u> </u>		
	rocess (initial release prior to RMM)	1.5e-1
Release fraction to wastewate RMM)	er from process (initial release prior to	0.05
Release fraction to soil from	process (initial release prior to RMM)	0.05
Technical conditions and m	neasures at process level (source) to preve	ent release
Common practices vary acros	ss sites thus conservative process release est	timates used [TCS1].
Technical onsite conditions	s and measures to reduce or limit discharg	es, air emissions and
releases to soil	_	
Risk from environmental expo	osure is driven by humans via indirect exposu	re (primarily ingestion)
[TCR1j].		
No wastewater treatment req		
Treat air emission to provide a typical removal efficiency of (%)		N/A
Treat onsite wastewater (prior to receiving water discharge) to provide		0
the required removal efficiend	cy ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required		0
onsite wastewater removal ef	fficiency of ≥ (%)	
	orevent/limit release from site	•
	e to natural soils [OMS2]. Sludge should be in	ncinerated, contained or
	elated to municipal sewage treatment plan	ıt
Total and moderation	to mamerpar comago noument plan	
	I from wastewater via domestic sewage	94.1
	om wastewater after onsite and offsite	94.1
(domestic treatment plant) RI		0.0-4
Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d)		6.8e1

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Assumed domestic sewage treatment plant flow (m³/d)

2000

Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable regulations [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,99E-02 Max RCR Air = 1,08E-02

12. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Metal Working Fluids/Rolling Oils – Industrial

Section 1 Exposure Scenario Title Gas Oil	s (vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53	
Title	
Use in Metal Working Fluids/Rolling Oils	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17
Environmental Release Categories	4
Specific Environmental Release Category	ESVOC SpERC 4.7a.v1
Processes, tasks, activities covered	

Covers the use in formulated 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.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

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Section 2.1 Control of wor	ker exposure
Product characteristics	<u> </u>
Physical form of product	Liquid
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated
in product	differently) G13
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2
use/exposure	
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General measures	Control any potential exposure using measures such as contained
applicable to all activities	systems, properly designed and maintained facilities and a good standard of
CS135	general ventilation. Drain down systems and transfer lines prior to breaking
	containment. Drain down and flush equipment where possible prior to
	maintenance.
	Where there is potential for exposure: Ensure relevant staff are informed of
	exposure potential and aware of basic actions to minimise exposures;
	ensure suitable personal protective equipment is available; clear up spills
	and dispose of waste in accordance with regulatory requirements; monitor
	effectiveness of control measures; provide regular health surveillance as
	appropriate; identify and implement corrective actions. G25
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with
	substance likely. Clean up contamination/spills as soon as they occur.
	Wash off skin contamination immediately. Provide basic employee
	training to prevent / minimise exposures and to report any skin effects
	that may develop. E3 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. E4
General exposures (Closed	Handle substance within a closed system E47
systems) CS15	I landle substance within a closed system L47
General exposures (Open	Provide extract ventilation to points where emissions occur E54
systems) CS16	Total oxidative military to points where emissions occur 201
Bulk transfers CS14	Handle substance within a closed system. E47 Wear gloves tested to
	EN374 PPE15
Filling preparation of	Wear gloves tested to EN374 PPE15
equipment from drums or	
containers CS45	
Process sampling CS2	No other specific measures identified El20
Metal Machining	Minimise exposure by partial enclosure of the operation or equipment and
Operations CS79	provide extract ventilation at openings E60
Treatment of articles by	Wear gloves tested to EN374 PPE15
dipping and pouring CS35	
Spraying CS10	Minimise exposure by enclosing the operation or equipment and provide
	extract ventilation at openings E60 Provide a good standard of general
	ventilation (not less than 3 to 5 air changes per hour) .E11 Wear gloves
Manual nallan a salta da	tested to EN374, coveralls and eye protection PPE23
Manual roller application or	Wear suitable gloves tested to EN374 with specific employee training
brushing CS13	PPE17 Handle substance within a prodominantly closed system provided with
Automated metal	Handle substance within a predominantly closed system provided with

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rolling/forming CS80	extract ventilation E49	
Semi-automated metal	Provide extract ventilation to points where en	nissions occur E54.
rolling/forming CS83	The state of the s	
Equipment cleaning and	Drain down system prior to equipment break-	in or maintenance F55 Wear
maintenance CS39.	chemically resistant gloves (tested to EN374	
maintenance ecos.	employee training PPE16	, in combination with basic
Storage CS67	Store substance within a closed system. E84	
Section 2.2 Control of env		
Product characteristics	nonnental exposure	
	3 [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	Fredominantly hydrophobic [Fre4a].	
	Lin rogion	0.4
Fraction of EU tonnage used		0.1 1.0e4
Regional use tonnage (tonne		
Fraction of Regional tonnage		0.0097
Annual site tonnage (tonnes		1.0e2
Maximum daily site tonnage		5.0e3
Frequency and duration of	use	
Continuous release [FD2].		
Emission days (days/year)		20
	influenced by risk management	
Local freshwater dilution fact		10
Local marine water dilution fa		100
Other given operational co	nditions affecting environmental exposure	
Release fraction to air from r	process (initial release prior to RMM)	0.02
	ter from process (initial release prior to	3.0e-6
RMM)		5.55
	process (initial release prior to RMM)	0
	measures at process level (source) to preve	
	ess sites thus conservative process release est	
Technical onsite condition releases to soil	s and measures to reduce or limit discharg	es, air emissions and
	osure is driven by humans via indirect exposu	re (primarily ingestion)
[TCR1j].	The state of the s	ie (piiiiaiii) iiigeeieii)
No wastewater treatment red	guired [TCR6].	
	a typical removal efficiency of (%)	70
	or to receiving water discharge) to provide	0
the required removal efficiency \geq (%)		
		0
onsite wastewater removal efficiency of ≥ (%)		0
	prevent/limit release from site	· [OMC1] Do not onni:
	olved substance to or recover from wastewater	
[OMS3].	oils [OMS2]. Sludge should be incinerated, co	ntained or reclaimed
	related to municipal sewage treatment plan	t
Estimated substance remova	al from wastewater via domestic sewage	94.1
treatment (%)	and the state water via definestic sewage	
	om wastewater after onsite and offsite	94.1
(domestic treatment plant) R		J-7. 1
	nage (M _{Safe}) based on release following total	7.8e4
wastewater treatment remov		7.064
Assumed domestic sewage t		2000
	related to external treatment of waste for di	I .

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External treatment and disposal of waste should comply with applicable regulations [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,98E-02 Max RCR Air = 4,45E-03

13. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Release Agents or Binders – Industrial

Section 1 Exposure Scenario	Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53		(· · · · · · · · · · · · · · · · · · ·
Title		
Use as Release Agents or Bind	lers	
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 4, 6, 7, 8b, 10, 13, 14
Environmental Release Catego	ries	4
Specific Environmental Release	e Category	ESVOC SpERC 4.10a.v1
Processes, tasks, activities c	overed	
Covers the use as binders and	release agents i	ncluding material transfers, mixing, application
(including spraying and brushin	g), mould formir	ng and casting, and handling of waste.
Assessment Method		
See Section 3.		
Section 2 Operational condit	ions and risk n	nanagement measures
	·	
Section 2.1 Control of worke	r exposure	
Product characteristics	-	
Physical form of product L	iquid	

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brushing, rolling CS13 Equipment clean down and maintenance CS39 Storage CS67 Section 2.2 Control of envi	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16 Handle substance within a closed system. E84
Equipment clean down and maintenance CS39 Storage CS67	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16 Handle substance within a closed system. E84
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Equipment clean down and	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with
Equipment clean down and	Drain down system prior to equipment break-in or maintenance. E65.
brushing rolling CS13	population double, training 11 Liv
	specific activity training PPE17
Manual applications e.g.	Wear chemically resistant gloves (tested to EN374) in combination with
	EI19
0004	protection. PPE23 Ensure operatives are trained to minimise exposures.
CS34	better. PPE32 Wear suitable gloves (tested to EN374), coverall and eye
Spraying (manual) CS10,	Wear a full face respirator conforming to EN140 with Type A/P2 filter or
CS33	equipment E61 Wear suitable gloves tested to EN374 PPE15
Spraying (machine) CS10,	Minimise exposure by extracted full enclosure for the operation or
0,000110,0002,00100	EN374 PPE15
systems) CS32, CS108	provide extract ventilation at openings E60 Wear suitable gloves tested to
Casting Operations (open	Minimise exposure by partial enclosure of the operation or equipment and
	'basic' employee training PPE16
Mould forming CS31	Wear chemically resistant gloves (tested to EN374) in combination with
systems) CS30	'basic' employee training PPE16
Mixing operations (open	Wear chemically resistant gloves (tested to EN374) in combination with
systems) CS29	The same regions moderned admines Like
Mixing operations (closed	No other specific measures identified El20
CS8	'basic' employee training PPE16
Drum and batch transfers	Wear chemically resistant gloves (tested to EN374) in combination with
Bulk transfers CS14	Handle substance within a closed system E47
1	which are likely to lead to substantial aerosol release, e.g. spraying. E4
	suits and face shields may be required during high dispersion activities
	that may develop. E3 Other skin protection measures such as impervious
	training to prevent / minimise exposures and to report any skin effects
	Wash off skin contamination immediately. Provide basic employee
	substance likely. Clean up contamination/spills as soon as they occur.
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect
	appropriate; identify and implement corrective actions. G25
	effectiveness of control measures; provide regular health surveillance as
	and dispose of waste in accordance with regulatory requirements; monitor
	ensure suitable personal protective equipment is available; clear up spills
	exposure potential and aware of basic actions to minimise exposures;
	Where there is potential for exposure: Ensure relevant staff are informed of
	maintenance.
	containment. Drain down and flush equipment where possible prior to
CS135	general ventilation. Drain down systems and transfer lines prior to breaking
applicable to all activities	systems, properly designed and maintained facilities and a good standard of
General measures	Control any potential exposure using measures such as contained
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
exposure	hygiene is implemented G1.
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless
use/exposure	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2
in product	differently) G13
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.
DAMAGE DECOCURATION	Il invited transport management of FLDs at OTD OOG

3.2. Environment

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Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.4e4
Fraction of Regional tonnage used locally	0.18
Annual site tonnage (tonnes/year)	2.5e3
Maximum daily site tonnage (kg/day)	2.5e4
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	100
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	3.0e-7
RMM)	0.00 /
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to preve	-
Common practices vary across sites thus conservative process release esti	
Technical onsite conditions and measures to reduce or limit discharge	
releases to soil	es, an ennosions and
Risk from environmental exposure is driven by humans via indirect exposur	re (primarily inhalation)
[TCR1k].	e (phinanily initial autori)
No wastewater treatment required [TCR6].	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat all emission to provide a typical removal emiciency of (78) Treat onsite wastewater (prior to receiving water discharge) to provide the	0
required removal efficiency ≥ (%)	0
If discharging to domestic sewage treatment plant, provide the required	0
	ľ
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	COMC41 Do not apply
Prevent discharge of undissolved substance to or recover from wastewater	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, cor	ntained or reciaimed
[OMS3].	
Conditions and measures related to municipal sewage treatment plant	<u>(</u>
	.
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	1.7e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for dis	sposal
External treatment and disposal of waste should comply with applicable reg	
Conditions and measures related to external recovery of waste	-
External recovery and recycling of waste should comply with applicable reg	ulations [ERW1].
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures ur	nless otherwise indicated.
G21.	

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

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model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 6,07E-02 Max RCR Air = 8,37E-02

14. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Release Agents or Binders – Professional

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38,		
R40, R65, R51/53		
Title		
Use as Release Agents or Binders		
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14
Environmental Release Cate	gories	8a, 8d
Specific Environmental Relea	ase Category	ESVOC SpERC 8.10b.v1
Processes, tasks, activities	covered	
Covers the use as binders ar	nd release agents in	cluding material transfers, mixing, application by
spraying, brushing, and hand	lling of waste.	
Assessment Method		
See Section 3.		
Section 2 Operational conditions and risk management measures		
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless	
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions

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General measures	Control any potential exposure us	sing measures such as contained	
applicable to all activities CS135	systems, properly designed and n general ventilation. Drain down sy containment. Drain down and flus maintenance.	maintained facilities and a good standard of ystems and transfer lines prior to breaking sh equipment where possible prior to	
General measures (skin irritants) G19	Where there is potential for exposure potential and aware ensure suitable personal protective and dispose of waste in accordant effectiveness of control measures appropriate; identify and impleme Avoid direct skin contact with processin contact. Wear gloves (tested substance likely. Clean up contain Wash off skin contamination immetraining to prevent / minimise exposure potential and aware exposure protections.	duct. Identify potential areas for indirect to EN374) if hand contact with nination/spills as soon as they occur.	
		uired during high dispersion activities ntial aerosol release, e.g. spraying. E4	
Bulk transfers (closed systems) CS3, CS107	No other specific measures identi		
Drum/batch transfers CS8	Wear suitable gloves tested to EN		
Mixing operations (closed systems) CS29	No other specific measures identi	fied El20	
Mixing operations (open systems) CS30	Wear suitable gloves tested to EN	N374 PPE15	
Mould forming CS31	Provide extract ventilation to points where emissions occur E54 Wear suitable gloves tested to EN374 PPE15		
Casting Operations, with local exhaust ventilation CS32, CS109	Provide extract ventilation to points where emissions occur E54 Wear suitable gloves tested to EN374 PPE15		
Casting Operations, without local exhaust ventilation CS32, CS110	Wear a respirator conforming to E PPE29 Wear suitable gloves (test protection. PPE23	EN140 with Type A/P2 filter or better. ted to EN374), coverall and eye	
Spraying (manual) CS10, CS34 with local exhaust ventilation CS109		ventilated enclosure E57 Wear suitable I and eye protection PPE23 Ensure e exposures EI19	
Spraying (manual) CS10, CS34 without local exhaust ventilation CS110	better.PPE32 Wear suitable glove protection. PPE23 Ensure operati EI19	ming to EN140 with Type A/P2 filter or es (tested to EN374), coverall and eye ives are trained to minimise exposures.	
Manual applications e.g. brushing, rolling CS34, CS51	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17		
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to type EN374) in combination with basic employee training PPE16		
Storage CS67	Store substance within a closed system E84		
Section 2.2 Control of envi	ronmental exposure		
Product characteristics			
	[PrC3]. Predominantly hydrophob	oic [PrC4a].	
Amounts used			
	Fraction of EU tonnage used in region 0.1		
Regional use tonnage (tonnes/year) 2.9e3		2.9e3	

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Fraction of Regional tonnage used locally	0.0005
Annual site tonnage (tonnes/year)	1.5
Maximum daily site tonnage (kg/day)	4.0
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to	0.025
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.025
Technical conditions and measures at process level (source) to preve	ent release
Common practices vary across sites thus conservative process release est	
Technical onsite conditions and measures to reduce or limit discharg	
releases to soil	
Risk from environmental exposure is driven by humans via indirect exposure	re (primarily ingestion)
[TCR1j].	(p,g ,
No wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency \geq (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	ľ
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	
reclaimed [OMS3].	iomoratoa, ooritamisa si
Conditions and measures related to municipal sewage treatment plan	
Conditions and measures related to marnerpar corrage a camera plant	<u>,</u>
Estimated substance removal from wastewater via domestic sewage	94.1
<u> </u>	94.1
treatment (%) Total efficiency of removal from wastewater after onsite and offsite	94.1
	94.1
(domestic treatment plant) RMMs (%)	0.004
Maximum allowable site tonnage (M _{Safe}) based on release following total	6.2e1
wastewater treatment removal (kg/d) Assumed demostic sewage treatment plant flow (m³/d)	10000
Assumed domestic sewage treatment plant flow (m³/d)	2000 isposal
Conditions and measures related to external treatment of waste for di	•
External treatment and disposal of waste should comply with applicable reconditions and measures related to external recovery of waste	Julations [⊏ i vv ɔj.
Conditions and measures related to external recovery of waste	- I-4: [ED\\/41
External recovery and recycling of waste should comply with applicable reg	Julations [EKVV 1].
Section 3 Exposure Estimation	
3.1. Health	to the disease
The ECETOC TRA tool has been used to estimate workplace exposures un	nless otherwise indicated.
G21.	

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

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Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,99E-02 Max RCR Air = 5,79E-03

15. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Industrial

Section 1 Exposure Scena R40, R65, R51/53	rio Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Use as a Fuel		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 8a, 8b, 16
Environmental Release Cate		7
Specific Environmental Relea		ESVOC SpERC 7.12a.v1
Processes, tasks, activities		
Covers the use as a fuel (or twith its transfer, use, equipm		dditive components) and includes activities associated d handling of waste.
Assessment Method		
See Section 3.		
Section 2 Operational con-	ditions and risk ma	nnagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage differently) G13	substance in the product up to 100 % (unless stated
Frequency and duration of use/exposure	Covers daily expos	sures up to 8 hours (unless stated differently) G2
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless	
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions
General measures		ial exposure using measures such as contained
applicable to all activities CS135	general ventilation.	designed and maintained facilities and a good standard of Drain down systems and transfer lines prior to breaking
	icontainment. Drain	down and flush equipment where possible prior to

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	To at the control	
	maintenance.	valariant ataff and information
	Where there is potential for exposure: Ensu	
	exposure potential and aware of basic a	
	ensure suitable personal protective equipme	
	and dispose of waste in accordance with re-	
	effectiveness of control measures; provide r	
Canada na anatona a Valsia	appropriate; identify and implement correcti	
General measures (skin	Avoid direct skin contact with product. Ident	
irritants) G19	skin contact. Wear gloves (tested to EN374)	
	substance likely. Clean up contamination/sp	
	Wash off skin contamination immediately. P	
	training to prevent / minimise exposures and that may develop. E3	to report any skin enects
Bulk transfers CS14	Wear suitable gloves tested to EN374. PPE	15
Drum/batch transfers CS8	Wear suitable gloves tested to EN374. PPE1	
	No other specific measures identified El20	15
Use as a fuel (closed	ino other specific measures identified £120	
systems) GEST_12I, CS107		
Equipment cleaning and	Drain down system prior to equipment break	v in or maintenance FEE Was-
maintenance CS39	chemically resistant gloves (tested to type E	
	'basic' employee training PPE16	(N374) in Combination with
Storage CS67	Handle substance within a closed system.	201
Storage CS67 Section 2.2 Control of env		:04
	inoninientai exposure	
Product characteristics	2 (D 001 D 1 : (1 1 1 1 1 1 1 1 1 D 04 1	
	3 [PrC3]. Predominantly hydrophobic [PrC4a]	
Amounts used		To a
Fraction of EU tonnage used in region		0.1
Regional use tonnage (tonnes/year)		4.5e6
Fraction of Regional tonnage used locally		0.34
Annual site tonnage (tonnes/year)		1.5e6
Maximum daily site tonnage (kg/day)		5.0e6
Frequency and duration of	use	
Continuous release [FD2].		
Emission days (days/year)		300
	influenced by risk management	
Local freshwater dilution factor		10
Local marine water dilution f		100
Other given operational co	onditions affecting environmental exposure	9
	process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to		0.00001
RMM)		
Release fraction to soil from process (initial release prior to RMM)		
Technical conditions and I	measures at process level (source) to prev	ent release
Common practices vary acro	oss sites thus conservative process release es	stimates used [TCS1].
Technical onsite condition releases to soil	s and measures to reduce or limit dischar	ges, air emissions and
	osure is driven by freshwater sediment ITCR	1bl
Risk from environmental exposure is driven by freshwater sediment [TCR1b]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].		
	e a typical removal efficiency of (%)	95
	97.7	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)		
If discharging to domestic sewage treatment plant, provide the required 60.4		
		00.7
onsite wastewater removal e	:HICIETICY UI ∠ (70)	Ī

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Organisation	massures to	nrevent/limit	rolossa from	cita
ıvı uamsanını	IIIcasules iv	DIEACHRIIIII	TEIEASE ITUIT	SILE

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	97.7
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	5.0e6
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

Conditions and measures related to external treatment of waste for disposal

Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 9,09E-01 Max RCR Air = 6,32E-02

16. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Professional

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53

Title

Use as a Fuel

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Use Descriptor		
Sector(s) of Use 22		
Process Categories		1, 2, 3, 8a, 8b, 16
Environmental Release Categories		9a, 9b
Specific Environmental Release Category		ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered		
		Iditive components) and includes activities associated
with its transfer, use, equipm		
Assessment Method		,
See Section 3.		
Section 2 Operational con-	ditions and risk ma	nagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)		sure <0.5 kPa at STP. OC3.
Concentration of substance		substance in the product up to 100 % (unless stated
in product	differently) G13	· · · ·
Frequency and duration of		sures up to 8 hours (unless stated differently) G2
use/exposure		
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless
Conditions affecting	stated differently.	615. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Man	agement Measures and Operating Conditions
General measures		al exposure using measures such as contained
applicable to all activities	systems, properly designed and maintained facilities and a good standard of	
CS135	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	
		I and aware of basic actions to minimise exposures;
		sonal protective equipment is available; clear up spills
	and dispose of waste in accordance with regulatory requirements; monitor	
		ntrol measures; provide regular health surveillance as
		y and implement corrective actions. G25
General measures (skin		ontact with product. Identify potential areas for indirect
irritants) G19		gloves (tested to EN374) if hand contact with
		lean up contamination/spills as soon as they occur. amination immediately. Provide basic employee
		minimise exposures and to report any skin effects
		· · · · · · · · · · · · · · · · · · ·
Bulk transfers CS14	that may develop.	es tested to EN374. PPE15
Drum/batch transfers CS8		or carefully pour from container E64 Wear suitable
Drain/baton transiers 000	gloves tested to EN	
Refuelling activities CS507		es tested to EN374 PPE15
Use as a fuel (closed		ndard of general ventilation (not less than 3 to 5 air
systems) GEST_12I,	changes per hour) E11 or Ensure operation is undertaken outdoors E69	
CS107		·
Equipment cleaning and	Drain down system	prior to equipment break-in or maintenance E65 Wear
maintenance CS39	chemically resistant gloves (tested to EN374) in combination with basic	
	employee training	
Storage CS67		thin a closed system E84
Section 2.2 Control of env	ironmental exposu	re

G21.

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Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	6.7e6
Fraction of Regional tonnage used locally	0.0005
Annual site tonnage (tonnes/year)	3.3e3
Maximum daily site tonnage (kg/day)	9.2e3
Frequency and duration of use	
Continuous release [FD2].	
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	I .
<u> </u>	
Release fraction to air from process (initial release prior to RMM)	1.0e-4
Release fraction to all from process (initial release prior to Rimin) Release fraction to wastewater from process (initial release prior to	0.00001
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to preve	
Common practices vary across sites thus conservative process release est	
Technical onsite conditions and measures to reduce or limit discharg	
releases to soil	
Risk from environmental exposure is driven by humans via indirect exposur [TCR1j].	re (primarily ingestion)
No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat all emission to provide a typical removal emiciency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency ≥ (%)	U
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	ľ
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater	r IOMS11 Do not apply
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co [OMS3].	
Conditions and measures related to municipal sewage treatment plan	it
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	J-1.1
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	37.1
Maximum allowable site tonnage (M _{Safe}) based on release following total	1.4e5
wastewater treatment removal (kg/d)	1.460
Assumed domestic sewage treatment plant flow (m³/d)	2000
Conditions and measures related to external treatment of waste for di	
Combustion emissions limited by required exhaust emission controls [ETW	
considered in regional exposure assessment [ETW2].	I]. Combaction officerions
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable reg	gulations [FRW/1]
Section 3 Exposure Estimation	Julations [Liver].
3.1. Health	
5.1. Feetin	1 (1

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

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3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) IDSU41.

Max RCR Water = 5,99E-02 Max RCR Air = 5,45E-03

17. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Consumer

1101/00 do di doi Odilodilloi	
Section 1 Exposure Scenario Title Gas Oi	Is (vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53	
Title	
Use as a Fuel	
Use Descriptor	
Sector(s) of Use	21
Product Categories	13
Environmental Release Categories	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses in fuels.	
Assessment Method	
See Section 3.	

Section 2 Operational conditions and risk management measures

Section 2.1 Control of consumer exposure		
Product characteristics		
Physical form of product	liquid	
Vapour pressure (kPa)	Liquid, vapour pressure > 10 Pa OC15	
Concentration of substance	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]	
in product		
Frequency and duration of	Unless otherwise stated, covers use amounts up to 37500g [ConsOC2];	
use/exposure	covers skin contact area up to 420cm2 [ConsOC5]	
Other Operational	Unless otherwise stated, covers use frequency up to 0.143 times per day	
Conditions affecting	[ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]	

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exposure			
Product Category		Specific Risk Management Measures and	Operating Conditions
Froduct Cate	gory	Specific Kisk Mariagement Measures and	Operating Conditions
PC13:Fuels	ОС	Unless atherwise stated source concentration	no un to 1000/ [ConoOC1]:
	OC	Unless otherwise stated, covers concentration	
Liquid -		covers use up to 52 days/year[ConsOC3]; co	
subcategorie		use[ConsOC4]; covers skin contact area up	
s added:		each use event, covers use amounts up	
Automotive		outdoor use [ConsOC12]; covers use in room	
Refuelling		each use event, covers exposure up to 0.05h	
	RMM	No specific RMMs developed beyond those (
PC13:Fuels	oc	Unless otherwise stated, covers concentration	
Liquid -		covers use up to 26 days/year[ConsOC3]; co	
subcategorie		use[ConsOC4]; for each use event, covers u	
s added:		[ConsOC2]; covers outdoor use [ConsOC12]	
Garden		100m3[ConsOC11]; for each use event, cove	ers exposure up to
Equipment -		2.00hr/event[ConsOC14];	
Use	RMM	No specific RMMs developed beyond those	OCs stated [ConsRMM15]
PC13:Fuels	OC	Unless otherwise stated, covers concentration	
Liquid		covers use up to 26 days/year[ConsOC3]; co	
(subcategorie		use[ConsOC4]; covers skin contact area up to	
s added):		each use event, covers use amounts up to 7	
Garden		a one car garage (34m3) under typical ventila	
Equipment -		covers use in room size of 34m3[ConsOC11	
Refuelling		exposure up to 0.03hr/event[ConsOC14];	,,
1	RMM	No specific RMMs developed beyond those (OCs stated [ConsRMM15]
Section 2.2 C		ronmental exposure	
Product chara		Tommoman expectate	
		[DrC0] Dradominantly by drankakia [DrC4a]	
Amounts use		[PrC3]. Predominantly hydrophobic [PrC4a].	
		in nanian	0.4
	tonnage used		0.1
	onnage (tonne		1.6e7
	gional tonnage		0.0005
	nnage (tonnes/		8.2e3
	y site tonnage (2.3e4
	d duration of	use	
Continuous rel			
Emission days	(days/year)		365
		nfluenced by risk management	
Local freshwater dilution factor 10		10	
	vater dilution fa		100
Other given operational conditions affecting environmental exposure			
		osure is driven by humans via indirect exposu	
[TCR1j].	•	•	, , , ,
Release fraction to air from wide dispersive use (regional only) 1.0e-4			
Release fraction to wastewater from wide dispersive use		0.00001	
Release fraction to soil from wide dispersive use (regional only) 0.00001			
Conditions and measures related to municipal sewage treatment plant			
5 ui		a to manage to define the plan	
Cotimoto da sul-	otonoo zama::-	I from wootowotor via domestic covers	04.1
Estimated substance removal from wastewater via domestic sewage 94.1			
treatment (%)			
	Maximum allowable site tonnage (M _{Safe}) based on release following total 3.5e5		
	wastewater treatment removal (kg/d) Assumed domestic sewage treatment plant flow (m³/d) 2000		
			2000
Conditions ar	na measures r	elated to external treatment of waste for di	sposai

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Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

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 the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

4.2. Environment

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 5,99E-02 Max RCR Air = 1,11E-02

18. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Functional Fluids – Industrial

Section 1 Exposure Scena R40, R65, R51/53	rio Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Use as Functional Fluids		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 4, 8a, 8b, 9
Environmental Release Cate	gories	7
Specific Environmental Relea	ase Category	ESVOC SpERC 7.13a.v1
Processes, tasks, activities	covered	
Use as functional fluids e.g. of industrial equipment including		oils, coolants, insulators, refrigerants, hydraulic fluids in
	g maintenance and	related material transfers
Assessment Method		
See Section 3.		
Section 2 Operational con-	ditions and risk m	nanagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics	_	
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	

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use/exposure			
Other Operational	Assumes use at not more than 20°C above ar	mbient temperature, unless	
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
3	3	3	
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to		
	maintenance. Where there is potential for exposure: Ensure exposure potential and aware of basic accensure suitable personal protective equipmen and dispose of waste in accordance with regular effectiveness of control measures; provide regular effectiveness of control measures;	e relevant staff are informed of tions to minimise exposures; t is available; clear up spills latory requirements; monitor gular health surveillance as	
Company to the contract of the	appropriate; identify and implement corrective		
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3		
Bulk transfers CS14	No other specific measures identified El20		
Drum/batch transfers CS8	Wear suitable gloves tested to EN374 PPE15	5	
Filling of articles/equipment (closed systems) CS84, CS107	Transfer via enclosed lines E52		
Filling / preparation of equipment from drums or containers CS45	Wear suitable gloves tested to EN374 PPE15		
Equipment operation (closed systems) CS15	No other specific measures identified El20		
Equipment operation (open	Restrict area of openings and provide extract		
systems) CS16	points when substance handled at elevated te		
Re-work and re-	Wear suitable gloves tested to EN374 PPE15		
manufacture of articles CS19			
Equipment cleaning and	Wear chemically resistant gloves (tested to El	N374) in combination with	
maintenance CS39	'basic' employee training. PPE16	,	
Storage CS67	Store substance within a closed system. E84		
Section 2.2 Control of envi			
Product characteristics			
	[PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used			
Fraction of EU tonnage used in region 0.1			
		6.4e3	
		0.0016	
Annual site tonnage (tonnes/year) 1.0e1			
Maximum daily site tonnage (kg/day) 5.0e2			
Frequency and duration of use			
Continuous release [FD2].			
Emission days (days/year) 20			
Environmental factors not influenced by risk management			

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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)	5.0e-3
Release fraction to wastewater from process (initial release prior to	3.0e-6
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to preven	ent release
Common practices vary across sites thus conservative process release est	
Technical onsite conditions and measures to reduce or limit discharg	
releases to soil	•
Risk from environmental exposure is driven by humans via indirect exposu	re (primarily injestion)
[TCR1j].	"
No wastewater treatment required [TCR6].	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater	[OMS1]. Do not apply
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, co	ntained or reclaimed
[OMS3].	
Conditions and measures related to municipal sewage treatment plan	t
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	7.8e3
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for di	sposal
External treatment and disposal of waste should comply with applicable reg	gulations [ETW3].
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable reg	gulations [ERW1].
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures un	nless otherwise indicated.
G21.	
3.2. Environment	
The Hydrogerhan Diock Method has been used to calculate environmental	avenagura with the Detrorials

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk

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Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) IDSU41.

Max RCR Water = 5,98E-02 Max RCR Air = 4,36E-03

19. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Road and Construction Applications – Professional

R51/53 in Road and Co	nstruction Applic	cations – Professional	
	rio Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38,	
R40, R65, R51/53			
Title			
Use in Road and Constructio	n Applications		
Use Descriptor			
Sector(s) of Use		22	
Process Categories		8a, 8b, 9, 10, 11, 13	
Environmental Release Cate		8d, 8f	
Specific Environmental Relea		ESVOC SpERC 8.15.v1	
Processes, tasks, activities			
		ad and construction activities, including paving uses,	
	olication of roofing a	nd water-proofing membranes	
Assessment Method			
See Section 3.			
Section 2 Operational cond	ditions and risk ma	nnagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.		
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Man	nagement Measures and Operating Conditions	
General measures		al exposure using measures such as contained	
applicable to all activities		designed and maintained facilities and a good standard of	
CS135		Drain down systems and transfer lines prior to breaking	
	containment. Drain	down and flush equipment where possible prior to	
	maintenance.		
		ential for exposure: Ensure relevant staff are informed of	
		I and aware of basic actions to minimise exposures;	
	ensure suitable per	rsonal protective equipment is available; clear up spills	

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	and dispess of wests in accordance 20.	andatam mandaan aata aa aa 100
	and dispose of waste in accordance with reffectiveness of control measures; provide	
	appropriate; identify and implement correct	
General measures (skin		
irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with	
	substance likely. Clean up contamination/s	
	Wash off skin contamination immediately.	
	training to prevent / minimise exposures a	
	that may develop. E3 Other skin protection	
	suits and face shields may be required dur	
	which are likely to lead to substantial aero	
Drum/batch transfers (Non-	Wear gloves tested to EN374 PPE15	
dedicated facility) CS8,		
CS82		
Drum/batch transfers	Wear gloves tested to EN374 PPE15	
(dedicated facility) CS8,		
CS81		
Spraying/fogging by	Minimise exposure by partial enclosure of	
machine application CS25	provide extract ventilation at openings E60	
Manual applications a g	undertaken outdoors E69 Wear gloves tes Wear chemically resistant gloves (tested to	
Manual applications e.g. brushing, rolling CS13	specific activity training PPE17	D EN374) III Combination with
Dipping, immersion and	Wear chemically resistant gloves (tested to	EN374) in combination with
pouring CS4	'basic' employee training PPE16	5 ENST4) III Combination with
Equipment cleaning and	Drain down system prior to equipment bre	ak-in or maintenance
maintenance CS39	E65.Wear chemically resistant gloves (tes	
	with 'basic' employee training PPE16	to a
Store substance within a	Store substance within a closed system.	84
closed system. E84		
Section 2.2 Control of env	ironmental exposure	
Product characteristics		
	[PrC3]. Predominantly hydrophobic [PrC4	a].
Amounts used		
Fraction of EU tonnage used		0.1
Regional use tonnage (tonne		3.1e4
Fraction of Regional tonnage		0.0005
Annual site tonnage (tonnes/	(year)	1.5e1
Maximum daily site tonnage		4.2e1
Frequency and duration of	use	
Continuous release [FD2]. Emission days (days/year)		365
	influenced by risk management	303
Local freshwater dilution fact		10
Local freshwater dilution factor Local marine water dilution factor		100
	nditions affecting environmental exposu	
o and given operational co	nancino anocang environmental exposu	10
Release fraction to air from r	process (initial release prior to RMM)	0.95
	ter from process (initial release prior to	0.95
RMM)	to the process (initial release prior to	0.01
	process (initial release prior to RMM)	0.04
	neasures at process level (source) to pre	
	ss sites thus conservative process release	
	s and measures to reduce or limit discha	
releases to soil		

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Risk from environmental exposure is driven by freshwater sediment [TCR1	
If discharging to domestic sewage treatment plant, no onsite wastewater tr	eatment required [TCR9].
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide	12.2
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	ncinerated, contained or
reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plar	nt
Estimated substance removal from wastewater via domestic sewage	94.1
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	6.2e2
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for d	isposal
External treatment and disposal of waste should comply with applicable re	gulations [ETW3].
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable required	gulations [ERW1].
Section 3 Exposure Estimation	

3.1. Health

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

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 6,69E-02 Max RCR Air = 1,92E-02

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R51/53 in Explosives Manufacture and Use - Professional

R51/53 in Explosives Manufacture and Use – Professional			
Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53			
Title			
Explosives Manufacture and	Use		
Use Descriptor			
Sector(s) of Use	22		
Process Categories	1, 3, 5, 8a, 8b		
Environmental Release Cate	gories 8e		
Specific Environmental Relea			
Processes, tasks, activities			
	m the manufacture and use of slurry explosives (including materials		
transfer, mixing and charging			
Assessment Method			
See Section 3.			
	ditions and risk management measures		
poomen = operaneman com			
Section 2.1 Control of wor	kor ovnocuro		
Product characteristics	nei exposule		
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.		
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
General measures applicable to all activities CS135 General measures (skin irritants) G19	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25 Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee		
General exposures (closed systems) CS15 General exposures (open	training to prevent / minimise exposures and to report any skin effects that may develop. E3 Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15		
systems) CS16			
Process sampling CS2	No specific measures identified EI18		
Drum and batch transfers	Use drum pumps or carefully pour from container E64 Wear chemically		
	resistant gloves (tested to EN374) in combination with 'basic' employee		

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	training PPE16	
Bulk transfers CS14	Handle substance within a closed system E	47 Wear suitable gloves
	tested to EN374 PPE15	
Mixing operations (open	Provide extract ventilation to points where emissions occur E54 Wear	
systems) CS30	chemically resistant gloves (tested to EN37	4) in combination with 'basic'
	employee training PPE16	
Production or preparation	Wear suitable gloves tested to EN374 PPE	15
or articles by tabletting,		
compression, extrusion or		
pelletisation CS100		
Drum and small package	Wear suitable gloves tested to EN374 PPE	15
filling CS8		
Laboratory activities CS36	No specific measures identified EI18	
Equipment clean down and	Drain down system prior to equipment brea	
maintenance CS39	Wear chemically resistant gloves (tested to	EN374) in combination with
	'basic' employee training. PPE16	
Storage CS67	Store substance within a closed system. E8	34
Section 2.2 Control of env	ironmental exposure	
Product characteristics		
Substance is complex UVCB	[PrC3]. Predominantly hydrophobic [PrC4a]	
Amounts used		
Fraction of EU tonnage used	in region	0.1
Regional use tonnage (tonne		1.3e4
Fraction of Regional tonnage		0.0005
Annual site tonnage (tonnes/		6.7
Maximum daily site tonnage		1.8e1
Frequency and duration of	use	111991
Continuous release [FD2].		
Emission days (days/year)		365
Environmental factors not	influenced by risk management	
Local freshwater dilution fact		10
Local marine water dilution fa	actor	100
	nditions affecting environmental exposur	
<u>g </u>	3	
Release fraction to air from n	process (initial release prior to RMM)	0.001
	ter from process (initial release prior to	0.02
RMM)	ler from process (initial release prior to	0.02
,	process (initial release prior to RMM)	0.01
	neasures at process level (source) to prev	
	ss sites thus conservative process release e	
	s and measures to reduce or limit dischar	
releases to soil		goo, an onnocione and
	osure is driven by freshwater sediment [TCR	1bl
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TC Treat air emission to provide a typical removal efficiency of (%) N/A		
Treat onsite wastewater (prior to receiving water discharge) to provide 8.8		
the required removal efficiend	• • • • • • • • • • • • • • • • • • • •	0.0
		0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)		Ĭ
	prevent/limit release from site	1
	e to natural soils [OMS2]. Sludge should be	incinerated contained or
reclaimed [OMS3].	e to natural solis [ONI32]. Sludge should be	momerateu, containeu oi
	related to municipal sewage treatment pla	nt
	al from wastewater via domestic sewage	94.1

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treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	94.1
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) based on release following total	2.9e2
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m ³ /d) 2000	
Conditions and measures related to external treatment of waste for disposal	

External treatment and disposal of waste should comply with applicable regulations [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Section 3 Exposure Estimation

3.1. Health

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

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3].

Max RCR Water = 6.44E-02 Max RCR Air = 1,71E-02

Assessment Method

21. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Rubber Production and Processing - Industrial

10 1/00 III Rubbol I Toudottoli alia i To	recening industrial
Section 1 Exposure Scenario Title Gas Oil	ls (vacuum, hydrocracked & distillate fuels) R20, R38,
R40, R65, R51/53	
Title	
Rubber Production and Processing	
Use Descriptor	
Sector(s) of Use	3, 10, 11
Process Categories	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21
Environmental Release Categories	1, 4, 6d
Specific Environmental Release Category	ESVOC SpERC 4.19.v1
Processes, tasks, activities covered	
Manufacture of tyres and general rubber artic	les, including processing of raw (uncured) rubber,
handling and mixing of rubber additives, caler	ndaring, vulcanising, cooling and finishing as well as
maintenance	

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See Section 3.		
Section 2 Operational conditions and risk management measures		
Section 2.1 Control of wor	ker exposure	
Product characteristics	The exposure	
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure	Covord daily expectation up to a floure (unloss stated differently) CE	
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient	
Conditions affecting	temperature). OC7. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	
, and the second		
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to	
	breaking containment. Drain down and flush equipment where possible prior to maintenance.	
	Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25	
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 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. E4	
Bulk transfers (closed	No other specific measures identified El20	
systems) CS14, CS107		
Bulk transfers (open systems) CS14, CS108	Wear suitable gloves tested to EN374 PPE15	
Material transfers CS3	Wear suitable gloves tested to EN374. PPE15	
Bulk weighing CS91	Wear suitable gloves tested to EN374.PPE15 No other specific measures identified EI20	
Small scale weighing CS90	Wear suitable gloves tested to EN374 PPE15	
Additive pre-mixing CS92	Wear suitable gloves tested to EN374.PPE15	
Calendaring (including	Handle substance within a predominantly closed system provided with	
Banburys) CS64	extract ventilation E49 Wear suitable gloves tested to EN374 PPE15	
Pressing uncured rubber blanks CS73	Wear suitable gloves tested to EN374 PPE15	
Tyre build-up CS112	Minimise exposure by extracted full enclosure for the operation or equipment E61 Wear suitable gloves (tested to EN374), coverall and eye protection PPE23	
Vulcanisation CS70	Provide extract ventilation to material transfer points and other openings E82	
Cooling cured articles CS71	Minimise exposure by partial enclosure of the operation or equipment and	

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	provide extract ventilation at openings E60		
Production of articles by	Wear suitable gloves tested to EN374 PPE15		
dipping and pouring CS113	Vical suitable gioves tested to ENGTATT ETC	,	
Finishing operations CS102	Wear suitable gloves tested to EN374 PPE15		
Laboratory activities CS36	No other specific measures identified El20	,	
Equipment clean down and	Drain or remove substance from equipment prior to break-in or		
maintenance CS39	maintenance E81 Wear chemically resistant gloves (tested to type		
EN374) in combination with 'basic' employee training PPE16			
Storage CS67 Store substance within a closed system. E84			
Section 2.2 Control of environmental exposure			
Product characteristics			
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].			
Amounts used			
Fraction of EU tonnage used in region 0.1			
Regional use tonnage (tonnes/year)		1.6e4	
Fraction of Regional tonnage used locally		1.064	
Annual site tonnage (tonnes/year)		1.6e4	
		5.2e4	
Maximum daily site tonnage (kg/day) Frequency and duration of use		J.254	
Continuous release [FD2].			
<u> </u>			
		300	
Environmental factors not influenced by risk management Local freshwater dilution factor 10			
		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		3.0e-5	
RMM)			
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 estimates used [TCS1].			
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 [TCR1b].			
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].			
Treat air emission to provide a typical removal efficiency of (%)		0	
Treat onsite wastewater (prior to receiving water discharge) to provide 52.8			
the required removal efficiency ≥ (%)			
If discharging to domestic sewage treatment plant, provide the required		0	
onsite wastewater removal efficiency of \geq (%)			
Organisation measures to prevent/limit release from site			
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply			
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed			
[OMS3].			
Conditions and measures related to municipal sewage treatment plant			
Estimated substance removal from wastewater via domestic sewage		94.1	
treatment (%)			
Total efficiency of removal from wastewater after onsite and offsite 94.1			
(domestic treatment plant) RMMs (%)			
Maximum allowable site tonn	4.2e5		
wastewater treatment removal (kg/d)			
Assumed domestic sewage treatment plant flow (m³/d) 2000			

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Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable regulations [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Section 3 Exposure Estimation

3.1. Health

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

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Max RCR Water = 1,25E-01 Max RCR Air = 2,62E-02