

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING
1.1 Product identifier

Trade name	DIESEL, HEATING OIL
Company product code	POK 0/-7, POK -5/-15, DIK 0/-7, DIK -5/-15, POT -29/-34, DIT -29/-34, MPÖ 0/-7, MPÖ -5/-15, MPÖ -29/-34, Off-Road Diesel
REACH registration number	01-2119484664-27-XXXX (Fuels, diesel) 01-2119450077-42-XXXX (Alkanes, C10-20, branched and linear)

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

The uses of the chemical	Distribution of Substance Use as a fuel Formulation & (Re)packing Use of substance in Explosives Manufacture and Use See section 16 for PROC/SU/ERC-codes for identified uses.
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1.3 Details of the supplier of the safety data sheet
Manufacturer, importer, other undertaking

	North European Oil Trade Oy
Street address	Urho Kekkosen katu 5C
Postcode and post office	FI-00100 Helsinki
Post-office box	P.O. Box 55
Postcode and post office	00088 S-RYHMÄ
Telephone number	+358 10 402 7001
E-mail address	tuotelaatu@neot.fi
Finnish Business ID (Y code)	1801056-5

1.4 Emergency telephone number

General emergency telephone number 112

Poison Information centre (in Finland), open 24 h daily
PL 340 (Haartmaninkatu 4)
00029 HUS
(09) 471977 or (09) 4711

SECTION 2: HAZARDS IDENTIFICATION
2.1 Classification of the substance or mixture
1272/2008 (CLP)

Flam. Liq. 3, H226
Acute Tox. 4, H332
Skin Irrit. 2, H315
Carc. 2, H351
STOT RE 2, H373
Asp. Tox. 1, H304

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Aquatic Chronic 2, H411

67/548/ETY – 1999/45/EY (DSD/DPD)

Xn, N: R20-38-40-65-51/53

2.2 Label elements

1272/2008 (CLP)

GHS02-GHS07-GHS08-GHS09



Signal word: **DANGER**

Contains: Fuels, diesel; Alkanes, C10-20, branched and linear

Hazard statements

H226	Flammable liquid and vapour.
H332	Harmful if inhaled.
H315	Causes skin irritation.
H304	May be fatal if swallowed and enters airways.
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

P210	Keep away from heat / sparks / open flames / hot surfaces. — No smoking
P261	Avoid breathing fume.
P301+310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331	Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P273	Avoid release to the environment.

2.3 Other hazards

Evaporates slowly.

Oil mist may irritate eyes and the respiratory tract. Risk of soil and groundwater contamination.

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
3.2 Hazardous ingredients

Name of the ingredient	CAS-number	EC-number	REACH-registration number	Concentration	Classification
Fuels, diesel	68334-30-5	269-822-7	01-2119484664-27-XXXX	Min. 60 %	CLP: Flam. Liq. 3, H226; Asp. Tox. 1, H304; Skin irrit. 2, H315; Acute Tox 4, H332; Carc. 2, H351; STOT RE2 (blood, liver, thymus), H373; Aquatic Chronic 2, H411 DSD/DPD: Xn, N: R20, R38, Carc. Cat 3, R40, R51/53, R65
Alkanes, C10-20, branched and linear	-	618-882-6	01-2119450077-42-XXXX	Max. 40 %	CLP: Asp. Tox. 1, H304; EUH066 DSD-DPD: Xn; R65-66

3.3 Other information

Preparation of renewable raw material diesel, petroleum product and additives. Contains petroleum fractions and straight-run and hydrocracked gas-oil fractions.

Alkanes, C10-20, branched and linear: Identity outside the EU (CAS-number and name of the ingredient): Alkanes, C10-20, branched and linear, CAS 928771-01-1.

SECTION 4: FIRST AID MEASURES
4.1 Description of first aid measures
Inhalation:

If oil mist has been inhaled, remove victim to fresh air and obtain medical attention (risk of chemical pneumonitis).

Skin contact:

Remove contaminated clothing, preferably after several minutes in safety shower (evaporation of liquid may cause fire hazard). Wash the skin with plenty of water and soap. If skin irritation persists, consult a physician.

Eye contact:

Rinse immediately with plenty of water, also under the eyelids. Continue irrigation for at least 15 minutes while moving eyes to extreme positions. If irritation, blurred vision or other symptoms persist, consult a physician (risk of corneal injury).

Ingestion:

DO NOT INDUCE VOMITING. If vomiting occurs, help to keep the victim's head down so that aspiration into the lungs will not occur. Obtain medical assistance immediately (risk of aspiration into the lungs and fatal chemical pneumonia especially if nausea or irritation occurs). If delayed symptoms such as fever (> 37 °C), shortness of breath, chest pain or continuous coughing occur during six hours after exposure, obtain immediate medical attention. Do not give the patient anything to eat.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: Harmful if inhaled. Oil mist may irritate respiratory organs and cause fatal chemical pneumonia. The following signs and symptoms may appear and be either acute or delayed: fever, shortness of breath, chest pain, difficulty in breathing, coughing etc.

MATERIAL SAFETY DATA SHEET**DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES**5.1 Extinguishing media****Suitable extinguishing agents**

Dry chemical or foam. Sand or earth are suitable in small fires. Heavy foam and water mist only for professional firefighters.

Unsuitable extinguishing agents

Do not use high pressure water jets for fire extinction.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour. Explosion risk due to pressure increase if product containers or tanks are subjected to fire.

Toxic or harmful gases may be formed (complex mixtures of airborne particles, gases (smoke), carbon monoxide, oxides of sulfur, organic and inorganic compounds). Carbon dioxide may be formed by incomplete burning. The product floats in water and may ignite there.

5.3 Advice for firefighters

Use full protective clothing and a self-contained breathing apparatus. Cool product containers and tanks near the fire with water spray from a sufficiently safe distance. Prevent entry of extinguishing media into waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Evacuate people upwind from the spill area. Keep unnecessary and unprotected personnel from entering. Remove all ignition sources. Stop the leak if it can be done safely. Ensure effective ventilation at the leak site. The fumes are heavier than air, and may spread along ground.

Avoid contact with skin and breathing of oil mist. Use appropriate personal protection. Take precautionary measures (e.g. earthing) against static discharges.

6.2 Environmental precautions

Prevent spill from spreading and entry into sewers, soil and waterways. If the product contaminates soil, watercourses or drainage systems, inform the local authorities.

6.3 Methods and material for containment and cleaning up

Immediately start clean-up of the liquid and contaminated soil. Small volumes can be absorbed with inert materials (e.g. sand, diatomaceous earth, commercial absorbent) and collected in suitable labeled containers to be disposed of in accordance with local regulations. Large volumes should be pumped into containers. Pay attention to the fire and health hazards caused by the product. Ensure adequate ventilation.

If possible, contain the large leaks in open waters with barriers. The use of dispersants should be advised by an expert, and, if required, approved by local authorities.

6.4 Reference to other sections

Safe handling: see point 7

Personal protection equipment: see point 8

Disposal: see point 13

SECTION 7: HANDLING AND STORAGE**7.1 Precautions for safe handling**

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Keep away from all sources of heat or ignition. Take precautionary measures (e.g. earthing) against static discharges. Concentrations in air must be kept below any lower explosive limits. Ensure adequate ventilation (use process enclosures or local exhaust ventilation if necessary). Avoid evaporation of the product during handling and transfers. Avoid inhalation of vapours and contact with skin, eyes or clothing. Wear appropriate personal protective equipment. Wash hands after handling the product. Do not eat, drink or smoke during handling. During tank operations follow special instructions (risk of oxygen displacement, ethers and hydrocarbons).

7.2 Conditions for safe storage, including any incompatibilities

Store in containers and areas suitable for the storage of combustible liquids. Store in tightly sealed, appropriately labeled containers which are impermeable to the product. Store away from all sources of heat or ignition and food and drink. Suitable containers: steel, stainless steel. For incompatible materials see point 10.5. Use appropriate containment to prevent environmental contamination.

7.3 Specific end use(s)

None reported.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National occupational exposure limit values

Oil mist* 5 mg/m³ (8 h) – HTP 2014/FIN

Other limit values

Individual limit values can be applied for hydrocarbons.

*Occupational exposure monitoring method: SFS-EN 689, NIOSH Method 5026

DNEL

Workers:

Fuels, diesel, Inhalation, acute: 4300 mg/m³ /15 min, oil mist (Short term exposure, systematic effects)

Fuels, diesel, Inhalation, chronic: 68 mg/m³ /8 h, oil mist, and skin, chronic: 2.9 mg/kg bw /8 h (Long term exposure, systematic effects).

Alkanes, C10-20, branched and linear, Inhalation, chronic: 147 mg/m³ /day, and skin, chronic: 42 mg/kg bw /day (Long term exposure, systematic effects).

General population exposed via the environment:

Fuels, diesel, Inhalation, acute: 2600 mg/m³ /15 min, oil mist (Short term exposure, systematic effects)

Fuels, diesel, Inhalation, chronic: 20 mg/m³ /24 h, oil mist, and skin, chronic: 1.3 mg/kg bw /24 h (Long term exposure, systematic effects).

Alkanes, C10-20, branched and linear, Inhalation, chronic: 94 mg/m³ , and skin, chronic: 18 mg/kg bw / day (Long term exposure, systematic effects).

PNEC

Chemical safety assessment has not been performed for the product. No information available on ingredients.

8.2 Exposure controls

Appropriate engineering controls

Handle the product in closed systems or provide sufficient ventilation (use process enclosures or local exhaust ventilation and personal protection if necessary).

Eye/face protection

Use tight-fitting safety goggles if splashing may occur or aerosol is formed. Use a face shield if necessary.

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

Skin protection

Wear appropriate antistatic protective clothing to prevent skin contact. If splashes may occur, wear chemical resistant gloves, shoes and apron.

Hand protection

Wear appropriate chemical-resistant, impervious protective gloves, e.g. of nitrile rubber, neoprene, PVC or Viton™. Protection index: 6 (breakthrough time > 480 min, EN374). Change protective gloves regularly in order to avoid penetration problems.

Respiratory protection

Filter device/Half mask/combined organic gas and vapour and particle filter (type A2-P3). The use of filter devices should be limited to max. 2 hrs per day. Filter devices must not be used when oxygen levels are low (< 17 vol.-%). The filter has a limited lifetime and must be changed sufficiently often. If significant amounts of mist or vapour form, use supplied-air respirator. Use respiratory protection according to EN140 and EN141.

Thermal hazards

None known.

Environmental exposure controls

Prevent entry into sewers or the environment. Precautions must be taken against leakages by constructing collecting pools and sewerage systems as well as by surfacing the loading and unloading stations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Red, clear liquid.
Odour	Mild scent of hydrocarbons.
Odour threshold	Unknown.
pH	Not applicable.
Melting point/freezing point	Not applicable.
Initial boiling point and boiling range	150–370 °C (EN ISO 3405)
Flash point	> 55 °C (EN ISO 2719)
Evaporation rate	Unknown.
Flammability (solid, gas)	Not relevant.
Upper/lower flammability or explosive limits	Upper: 6 vol-%, lower: 1 vol-% (estimated)
Vapour pressure	< 1 kPa (38 °C; water = 6.5 kPa) (estimated)

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Vapour density	Unknown.
Relative density	0.80–0.85 (water = 1)(EN ISO 12185)
Solubility(ies)	Slightly soluble in water
Partition coefficient: n-octanol/water	log K _{ow} 3 – above 6
Auto-ignition temperature	ca. 240 °C (estimated)
Decomposition temperature	Unknown.
Viscosity	≤ 4.5 mm ² /s (40 °C; water = 0.6 mm ² /s)
Explosive properties	Not classified as explosive.
Oxidising properties	Not classified as oxidising.

9.2 Other information

None reported.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Not reactive under normal use and storage conditions.

10.2 Chemical stability

Chemically stable under normal storage conditions.

10.3 Possibility of hazardous reactions

None known.

10.4 Conditions to avoid

Keep away from heat and ignition sources.

10.5 Incompatible materials

Oxidising agents.

10.6 Hazardous decomposition products

None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Harmful if inhaled.

Fuels, diesel:

LD50 (oral, rat) > 5000 mg/kg (OECD 401, 420)

LD50 (dermal, rabbit) = 4300 mg/kg (OECD 434)

LC50 (inhaled, 4 h, rat) = 3.6 - 5.4 mg/L (OECD 403)

Alkanes, C10-20, branched and linear:

LD50 (oral, rat) > 2000 mg/kg (EC B1 tris)

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

LD50 (dermal, rat) > 2000 mg/kg (EC B3)

Skin corrosion/irritation

Irritates skin. Prolonged or repeated contact may cause dryness or irritation of the skin.

Serious eye damage/irritation

The product is not classified as irritant or damaging to eyes. However, splashes and oil mist may irritate eyes.

Respiratory or skin sensitisation

The product is not classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

The product is not classified as a mutagen.

Fuels, diesel:

In animal studies (in vitro), genotoxic effects have been observed in bacteria and mouse lymphocytes but the effects were not observed in in vivo studies.(OECD 471, 475)

Alkanes, C10-20, branched and linear:

No genotoxic effects were observed in in vitro studies (EC B10, B13/14, B17).

No toxic effect on reproduction (OECD 416).

Carcinogenicity

The product is suspected of causing cancer (hydrocracked gas-oil fractions). In animal studies, skin tumours have been observed in mice.

Reproductive toxicity

The product is not classified as a reproductive toxicant.

STOT-single exposure

The product is not classified as toxic to specific target organs. However, oil mist may irritate airways.

STOT-repeated exposure

The product is classified as toxic to specific target organs (thymus, liver and bone marrow) at repeated exposure.

Aspiration hazard

The product may be fatal if swallowed and enters airways.

Other information

Ingestion may cause irritation of the gastrointestinal tract.

SECTION 12: ECOLOGICAL INFORMATION**12.1 Toxicity**

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Myrkyllistä vesieliöille, pitkäaikaisia haittavaikutuksia.

Välitön myrkyllisyys vesieliöille

No ecotoxicological data about the product itself is available. On basis of the compounds it contains, the product is toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Do not release into drainage systems, waterways or soil.

Acute toxicity

Fuels, diesel:

Fish: LL50/96 h = 21 mg/L, NOEL/96 h = 10 mg/L; WAF (OECD 203, EC C.1)

Daphnia: EL50/48 h = 68 mg/L; NOEL/48 h = 47 mg/L; WAF (OECD 202, EC C.2)

Algae: EbL/72 h = 10 mg/L; NOEL/48 h = 3 mg/L; NOEL/72 h = 1 mg/L; WAF (OECD 201, EC C.3)

Alkanes, C10-20, branched and linear:

LL50 (rainbow trout *Oncorhynchus mykiss*, 96 h) > 1000 mg/L (WAF)

EL50 (water flea *Daphnia*, 48 h) > 100 mg/L (WAF)

EL50 (alga, 72 h) > 100 mg/L (WAF)

Long term toxicity

Fuels, diesel:

Fish: NOEL/14 d = 0.08 mg/L (QSAR)

Daphnia: NOEL/21 d = 0.2 mg/L (QSAR)

Alkanes, C10-20, branched and linear:

Daphnia: NOEC/21 d = 1 mg/L; LOEC/21 d = 3.2 mg/L; WAF (OECD 211)

sediment: NOEC/10 d = 373 mg/kg; LOEC/10 d = 1165 mg/kg; LC50/10 d = 1200 mg/kg (OSPAR

Protocols, Part A: Sediment Bioassay, 2005)

Toxicity to micro-organisms

Fuels, diesel: EL50/40 h > 1000 mg/L; NOEL/40 h = 3.22 mg/L (QSAR)

Alkanes, C10-20, branched and linear: EC50/30 min > 1000 mg/L; EC50/3 h > 1000 mg/L (OECD 209).

12.2 Persistence and degradability

Biodegradability

Readily biodegradable.

Chemical degradability

Does not hydrolyze in water. Gas-oil hydrocarbons may also degrade photochemically in surface water. Volatile hydrocarbons undergo atmospheric degradation.

12.3 Bioaccumulative potential

The product may be bioaccumulative ($\log K_{ow} > 3$).

12.4 Mobility in soil

The product is slightly water-soluble and evaporates slowly from water and soil surfaces. May leach through soil and pollute groundwater. Petroleum and gas-oil hydrocarbons can be adsorbed onto organic material in soil or sediment. In anaerobic conditions, degradation is extremely slow.

12.5 Results of PBT and vPvB assessment

The product is not PBT, not vPvB.

12.6 Other adverse effects

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

The product may stick to organisms like birds and plants and be lethally harmful.
Hydrocarbon residues in bottom sediment may be harmful to benthic organisms.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Hazardous waste. Dispose of in accordance with local and national regulation. When handling waste, observe the hazards and take all necessary precautionary measures. Observe also labelling and information requirements.

13.2 Waste from residues/unused products

Empty containers may contain flammable remnants of product. Dispose of empty containers for recovery, recycling or waste.

SECTION 14: TRANSPORT INFORMATION

14.1 UN-number

1202

14.2 UN proper shipping name

DIESEL FUEL

14.3 Transport hazard class(es)

3

14.4 Packing group

III

14.5 Environmental hazards

The product is classified as hazardous to the environment.
H411: Toxic to aquatic life with long lasting effects.

14.6 Special precautions for user

No special precautions.

14.7 Transport in bulk according to MARPOL73/78 and the IBC Code

Bulk (MARPOL 73/78, Annex I): Energy-rich fuels

This cargo is considered an Energy-rich fuel and effective 1 January 2019 should be carried subject to Annex I of MARPOL, see Annex 12 of MEPC.2/Circ.24.
Please also refer to MEPC.1/Circ.879 -GUIDELINES FOR THE CARRIAGE OF ENERGY-RICH FUELS AND THEIR BLENDS.

SECTION 15: REGULATORY INFORMATION

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

MSDS compiled according to Regulations (EC) No 1907/2006 REACH and amendment (EU) No 453/2010.

15.2 Chemical safety assessment

Chemical safety assessment has not been performed for the product.

Chemical safety assessment has been performed for the ingredients:
Fuels, diesel
Alkanes, C10-20, branched and linear

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

SECTION 16: OTHER INFORMATION

16.1 Changes to the previous version

Section 14. Transport information

16.2 Glossary of abbreviations

CLP: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

DSD: Directive 67/548/EEC - classification, packaging and labelling of dangerous substances

DPD: Directive 1999/45/EC - classification, packaging and labelling of dangerous preparations

HTP: Concentrations known to be hazardous

DNEL: Derived no-effect level

EL50: Effective level 50 % (median effective level): loading rate of the substance which kills or immobilizes 50 % of exposed organisms

IL50: Inhibitory level 50 % (median inhibitory level): loading rate of the substance which inhibits a biological function by 50 %

LD50: Lethal dose 50 % (median lethal dose): dose of the substance which kills 50 % of exposed organisms

LL50: Lethal level 50 % (median lethal level): loading rate of the substance which kills 50 % of the exposed organisms

WAF: Water-accommodated fraction: fraction of the substance mixed into the water phase (method applied to poorly water-soluble substances)

16.3 References

Finnish-language MSDS for the product (7 January 2015)

16.5 List of relevant R and H phrases

R20 Harmful by inhalation

R38 Irritating to skin

R40 Limited evidence of a carcinogenic effect.

R65 Harmful: may cause lung damage if swallowed.

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

H226 Flammable liquid and vapour.

H332 Harmful if inhaled.

H315 Causes skin irritation.

H304 May be fatal if swallowed and enters airways.

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.

16.7 Restrictions on use

Identified uses:

Distribution of the substance (SU3; PROC: 4, 8a, 8b, 9, 15; ERC: 1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7)

Use as a fuel

Industrial (SU 3; PROC: 1, 2, 3, 8a, 8b, 16; ERC: 7)

Professional (SU 22; PROC: 1, 2, 3, 8a, 8b, 16; ERC: 9a, 9b)

Consumers (SU 21; PC 13; ERC: 9a, 9b)

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Use of substance in Explosives Manufacture and Use - Professional
(SU22; PROC: 1, 3, 5, 8a, 8b; ERC: 8e)

Formulation & (Re)packing of Substances - Industrial
(SU3, SU10; PROC: 1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15; ERC: 2)

DO NOT TRY TO SUCK DIESEL OIL USING YOUR MOUTH.

16.8 Further information

NEOT Oy, Tuotelaatu, +358 10 402 7001, tuotelaatu@neot.fi

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
Date: 01.01.2019

Former date: : 06.09.2017

ANNEX EXTENDED MATERIAL SAFETY DATA SHEET

Exposure scenarios 1-6

AS1: Distribution of Substance - Industrial

1. Title

Use of descriptor	Sector(s) of Use: Industrial (SU3).
	Process Categories: PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 15
	Environmental Release Categories (ERC): 1, 2, 3, 4, 5, 6a, 6b, 6c, 7
	Specific Environmental Release Category: ESVOC SpERC 1.1b.v1
Processes, Tasks and Activities Covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid With potential for aerosol generation 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
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational 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 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

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop [E3].
General exposures (closed systems) [CS15]
Handle substance within a closed system [E47].
General exposures (open systems) [CS16]
Wear suitable gloves tested to EN374 [PPE15].
Process sampling [CS2]
No other specific measures identified [EI20].
Laboratory activities [CS36]
No other specific measures identified [EI20].
Bulk closed loading and unloading [CS501]
Handle substance within a closed system [E47]. Wear suitable gloves tested to EN374 [PPE15].
Bulk open loading and unloading [CS503]
Wear suitable gloves tested to EN374 [PPE15].
Drum and small pack filling [CS6]
Wear suitable gloves tested to EN374 [PPE15].
Equipment cleaning 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].
Storage [CS67]
Handle substance within a closed system [E84].

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 tonnage: 2.8 e7 tonnes per year
Fraction of Regional tonnage used locally: 0.002
Annual site tonnage: 5.6 e4 tonnes per year
Maximum daily site tonnage: 0.19 kilotonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 300
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.001
Release fraction to wastewater from process (initial release prior to RMM): 0.000001
Release fraction to soil from process (initial release prior to RMM): 0.00001

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1j: Risk from environmental exposure is driven by human via indirect exposure (primarily ingestion). TCR14: Prevent discharge of undissolved substance to or recover from onsite wastewater. TCR6: No wastewater treatment required. Treat air emission to provide a typical removal efficiency of 90 %. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 0 %. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %.
Organizational 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 treatment 94.1 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 94.1 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 2.9 kilotonnes per day.
Assumed domestic sewage treatment plant flow 2000 m ³ /day.
Conditions and measures related to external treatment of waste for disposal
ETW3: External treatment and disposal of waste should comply with applicable regulations.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

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 Petrorisk model [EE2].

MATERIAL SAFETY DATA SHEET**DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
Date: 01.01.2019

Former date: : 06.09.2017

AS2: Formulation & (Re)packing of Substances - Industrial

1. Title

Use of descriptor	Sector(s) of Use: Industrial (SU3), Formulation of preparations and/or re-packaging (SU10).
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
	Environmental Release Categories (ERC): 2 Specific Environmental Release Category: ESVOC SpERC 2.2.v1
Processes, Tasks and Activities Covered	Formulation, packing and re-packaging of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletization, extrusion, large and small scale packing, maintenance, sampling and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid With potential for aerosol generation 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
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational 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 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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

General exposures (closed systems) [CS15]
Handle substance within a closed system [E47].
General exposures (open systems) [CS16]
Wear suitable gloves tested to EN374 [PPE15].
Batch processes at elevated temperatures [CS136]
Provide extract ventilation to points where emissions occur [E54].
Process sampling [CS2]
No other specific measures identified [EI20].
Bulk transfers [CS14]
Handle substance within a closed system [E47]. Wear suitable gloves tested to EN374 [PPE15].
Drum/batch transfers [CS8]
Use drum pumps or carefully pour from container [E64] Wear chemically resistant gloves (tested to EN374) in combination with basic employee training [PPE16]
Mixing operations (open systems) [CS30]
Provide extract ventilation to points where emissions occur [E54] Wear chemically resistant gloves (tested to EN374) in combination with basic employee training [PPE16]
Production or preparation of articles by tableting, compression, extrusion or pelletisation [CS100]
Wear suitable gloves tested to EN374 [PPE15].
Drum and small package filling [CS8]
Wear suitable gloves tested to EN374 [PPE15]
Laboratory activities [CS36]
No other specific measures identified [EI20]
Equipment cleaning 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].
Storage [CS67]
Handle substance within a closed system [E84].

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 tonnage: 2.8 e ⁷ tonnes per year
Fraction of Regional tonnage used locally: 0.0011
Annual site tonnage: 3.0 e ⁴ tonnes per year
Maximum daily site tonnage: 100 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 300
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.01 Release fraction to wastewater from process (initial release prior to RMM): 0.00002 Release fraction to soil from process (initial release prior to RMM): 0.0001
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1b: Risk from environmental exposure is driven by freshwater sediment. TCR14: Prevent discharge of undissolved substance to or recover from onsite wastewater. TCR9 If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of 0 %. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 59.9 %. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %.
Organizational 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 treatment 94.1 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 94.1 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 680 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m ³ /day.
Conditions and measures related to external treatment of waste for disposal
ETW3: External treatment and disposal of waste should comply with applicable regulations.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

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 Petrorisk model [EE2] .

MATERIAL SAFETY DATA SHEET**DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
Date: 01.01.2019

Former date: : 06.09.2017

AS3: Use as a Fuel - Industrial

1. Title

Use of descriptor	Sector(s) of Use: Industrial (SU3).
	Process Categories PROC: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
	Environmental Release Categories (ERC): 7
	Specific Environmental Release Category: ESVOC SpERC 7.12a.v1
Processes, Tasks and Activities Covered	Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid With potential for aerosol generation [CS138] 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
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational 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 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].
Use as a fuel (closed systems) [GEST_12], CS107]
No other specific measures identified [EI20].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

Bulk transfers [CS14]
Wear suitable gloves tested to EN374 [PPE15].
Drum/batch transfers [CS8]
Wear suitable gloves tested to EN374 [PPE15].
Equipment cleaning and maintenance [CS39]
Drain down system prior to equipment break-in or maintenance [E65]. Wear chemically resistant gloves (tested to EN374) in
Storage [CS67]
Handle substance within a closed system [E84].

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 tonnage: 4500 kilotonnes per year
Fraction of Regional tonnage used locally: 0.34
Annual site tonnage: 1500 kilotonnes per year
Maximum daily site tonnage: 5 kilotonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 300
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.005
Release fraction to wastewater from process (initial release prior to RMM): 0.00001
Release fraction to soil from process (initial release prior to RMM): 0
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1b: Risk from environmental exposure is driven by freshwater sediment
TCR9: If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Treat air emission to provide a typical removal efficiency of 95 %.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 97.7 %.
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 60.4 %.
Organizational 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

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Estimated substance removal from wastewater via domestic sewage treatment 94.1 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 97.7 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 5000 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m ³ /day.
Conditions and measures related to external treatment of waste for disposal
ETW1: Combustion emissions limited by required exhaust emission controls. ETW2: Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

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 Petrorisk model [EE2] .

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
Date: 01.01.2019

Former date: : 06.09.2017

AS4: Use as a Fuel - Professional

1. Title

Use of descriptor	Sector(s) of Use: Professional (SU22).
	Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
	Environmental Release Categories (ERC): 9a, 9b
	Specific Environmental Release Category: ESVOC SpERC 9.12b.v1
Processes, Tasks and Activities Covered	Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid. With potential for aerosol generation [CS138] 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
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational 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 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].
Use as a fuel (closed systems) [GEST_12], CS107]
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11] or Ensure operation is undertaken outdoors [E69].

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

Bulk transfers [CS14]
Wear suitable gloves tested to EN374 [PPE15].
Drum/batch transfers [CS8]
Use drum pumps or carefully pour from container [E64]. Wear suitable gloves tested to EN374 [PPE15].
Refuelling activities [CS507]
Wear suitable gloves tested to EN374 [PPE15].
Equipment cleaning 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].
Storage [CS67]
Handle substance within a closed system [E84].

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 tonnage: 6.7 e7 per year
Fraction of Regional tonnage used locally: 0.0005
Annual site tonnage: 3.3 kilotonnes per year
Maximum daily site tonnage: 9.2 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 365
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.0001 Release fraction to wastewater from process (initial release prior to RMM): 0.00001 Release fraction to soil from process (initial release prior to RMM): 0,00001
Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1j: Risk from environmental exposure is driven by human via indirect exposure (primarily ingestion). TCR6: No wastewater treatment required. Treat air emission to provide a typical removal efficiency of N/A. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq 0\%$. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq 0\%$.
Organizational measures to prevent / limit release from site

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

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 treatment 94.1 %.

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 94.1 %.

Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 140 tonnes per day.

Assumed domestic sewage treatment plant flow 2000 m³/day.

Conditions and measures related to external treatment of waste for disposal

ETW1: Combustion emissions limited by required exhaust emission controls.

ETW2: Combustion emissions considered in regional exposure assessment.

Conditions and measures related to external recovery of waste

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

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 Petrorisk model [EE2] .

MATERIAL SAFETY DATA SHEET**DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
 Date: 01.01.2019

Former date: : 06.09.2017

AS5: Use as a Fuel – Consumer

1. Title

Use of descriptor	Sector(s) of Use: Professional (SU21).
	Process Categories: PROC13
	Environmental Release Categories (ERC): 9a, 9b Specific Environmental Release Category: ESVOC SpERC 9.12b.v1
Processes, Tasks and Activities Covered	Covers consumer uses in fuels.

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid Vapour pressure (kPa): Liquid, vapour pressure > 10 kPa [OC15].
Concentration of substance in product
Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Frequency and duration of use
Unless otherwise stated, covers use amounts up to 37500 g [ConsOC2]; covers skin contact area up to 420 cm ² [ConsOC5]
Other operational conditions affecting worker exposure
Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]
Specific Risk Management Measures and Operational Conditions
PC13: Fuels- Liquid – subcategories added: Automotive Refuelling
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 210.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 37500 g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100 m ³ [ConsOC11]; for each use event, covers exposure up to 0.05 hr/event [ConsOC14];
RMM: No specific RMMs developed beyond those OCs stated [ConsRMM15]
PC13: Fuels- Liquid – subcategories added: Garden Equipment - Use
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 26 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; for each use event, covers use amounts up to 750 g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100 m ³ [ConsOC11]; for each use event, covers exposure up to 2.00 hr/event [ConsOC14];
RMM: No specific RMMs developed beyond those OCs stated [ConsRMM15]
PC13: Fuels- Liquid – subcategories added: Garden Equipment - Refuelling
OC: Unless otherwise stated, covers concentrations up to 100 % [ConsOC1]; covers use up to 26 days/year

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

[ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 420.00 cm² [ConsOC5]; for each use event, covers use amounts up to 750 g [ConsOC2]; Coversuse in a one car garage (34 m³) under typical ventilation [ConsOC10]; covers use in room size of 34 m³ [ConsOC11]; for each use event, covers exposure up to 0.03 hr/event [ConsOC14];

RMM: No specific RMMs developed beyond those OCs stated [ConsRMM15]

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 tonnage: 1.6 e ⁷ per year
Fraction of Regional tonnage used locally: 0.0005
Annual site tonnage: 8.2 kilotonnes per year
Maximum daily site tonnage: 23 tonnes per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 365
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.0001
Release fraction to wastewater from process (initial release prior to RMM): 0.00001
Release fraction to soil from process (initial release prior to RMM): 0,00001
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment 94.1 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 350 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m ³ /day.
Conditions and measures related to external treatment of waste for disposal
ETW1: Combustion emissions limited by required exhaust emission controls.
ETW2: Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

3. Exposure estimation

3.1 Health

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of

**MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL**

Date: 01.01.2019

Former date: : 06.09.2017

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 Petrorisk model [EE2] .

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].

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL
 Date: 01.01.2019

Former date: : 06.09.2017

AS6: Use of substance in Explosives Manufacture and Use - Professional

1. Title

Use of descriptor	Sector(s) of Use: Professional (SU22)
	Process Categories: PROC1, PROC3, PROC5, PROC8a, PROC8b
	Environmental Release Categories (ERC): 8e
	Specific Environmental Release Category: Not Applicable
Processes, Tasks and Activities Covered	Covers exposures arising from the manufacture and use of slurry explosives (including materials transfer, mixing and charging) and equipment cleaning

2. Operational conditions and risk management measures

2.1. Control of worker exposure

Product characteristics
Physical form of product: Liquid With potential for aerosol generation 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
Covers daily exposures up to 8 hours (unless stated differently) [G2].
Other operational conditions affecting worker exposure
Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Specific Risk Management Measures and Operational 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 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].
General exposures (closed systems) [CS15]
Handle substance within a closed system [E47].
General exposures (open systems) [CS16]

MATERIAL SAFETY DATA SHEET
DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

Wear suitable gloves tested to EN374 [PPE15].
Process sampling [CS2]
No other specific measures identified [E120].
Bulk transfers [CS14]
Handle substance within a closed system [E47]. Wear suitable gloves tested to EN374 [PPE15].
Drum/batch transfers [CS8]
Use drum pumps or carefully pour from container [E64] Wear chemically resistant gloves (tested to EN374) in combination with basic employee training [PPE16]
Mixing operations (open systems) [CS30]
Provide extract ventilation to points where emissions occur [E54] Wear chemically resistant gloves (tested to EN374) in combination with basic employee training [PPE16]
Production or preparation of articles by tableting, compression, extrusion or pelletisation [CS100]
Wear suitable gloves tested to EN374 [PPE15].
Drum and small package filling [CS8]
Wear suitable gloves tested to EN374 [PPE15]
Laboratory activities [CS36]
No specific measures identified [E118]
Equipment cleaning 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].
Storage [CS67]
Handle substance within a closed system [E84].

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 tonnage: 1.3 e ⁴ tonnes per year
Fraction of Regional tonnage used locally: 0.0005
Annual site tonnage: 6.7 tonnes per year
Maximum daily site tonnage: 18 kg per day
Frequency and duration of use
Continuous release [FD2].
Emission days per year: 365
Environmental factors not influenced by risk management
Local freshwater dilution fraction: 10
Local marine dilution fraction: 100
Other Operational Conditions of use affecting environmental exposure
Release fraction to air from process (initial release prior to RMM): 0.001
Release fraction to wastewater from process (initial release prior to RMM): 0.02
Release fraction to soil from process (initial release prior to RMM): 0.01

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

Technical condition and measures at process level (source) to prevent release
TCS 1: Common practices vary across sites thus conservative process release estimates used.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
TCR1b: Risk from environmental exposure is driven by freshwater sediment. TCR9 If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Treat air emission to provide a typical removal efficiency of N/A %. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ 8.8 %. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ 0 %.
Organizational measures to prevent / limit release from site
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 treatment 94.1 %.
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs 94.1 %.
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal 0.29 tonnes per day.
Assumed domestic sewage treatment plant flow 2000 m ³ /day.
Conditions and measures related to external treatment of waste for disposal
ETW3: External treatment and disposal of waste should comply with applicable regulations.
Conditions and measures related to external recovery of waste
ERW1: External recovery and recycling of waste should comply with applicable regulations.

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 Petrorisk model [EE2] .

MATERIAL SAFETY DATA SHEET

DIESEL, HEATING OIL

Date: 01.01.2019

Former date: : 06.09.2017

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.