Safety Data Sheet as per EC Regulation No. 1907/2006

Light Fuel Oil
PdNr. 590010

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

1.1 Product identifier

Trade name	:	Light Fuel Oil

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

Use of the Substance/Mixture

Intended usage	:	For firing in the oil firing systems having been approved for this fuel.
Identified uses according to CSR (Chemical Safety Report)	:	**SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites** 01-Manufacture of substance 01a - Distribution of substance 12a - Use as a fuel: Industrial **SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)** 12b - Use as a fuel: Professional

For details related to the Uses please see Annex.

1.3 Details of the supplier of the safety data sheet

Full address **Manufacturer, importer, supplier**	:	OMV Petrom S.A. Strada Coralilor Nr. 22 Sector 1 013329 Bucureşti („Petrom City") Romania
Telephone	:	+40 (0) 725 16 16 16
E-mail address of the competent person	:	info.msds@petrom.com

1.4 Emergency telephone number

+40 (0) 725 16 16 16	Emergency Center HSSE / Normal charge call / 24/7 / Romanian / English language
+40 21 318 36 06	Office for International Sanitary Regulation and Toxicological Information/Normal charge call; Mo-Fr; 8:00-15:00; Romanian language

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (EC Regulation No 1272/2008)

Acute Tox. 4 H332, Skin Irrit. 2 H315, Carc. 1B H350, Repr. 2 H361d, STOT RE 2 H373, Aquatic Acute 1 M-Factor = 1; H400, Aquatic Chronic 1 M-Factor = 1; H410,
For the full text of classifications referred to in this section and H-phrases, see Section 16.

2.2 Labelling elements

Labelling (EC Regulation No 1272/2008)

Hazard pictograms :

Signal word	:	Danger
Hazard statements	:	H315 Causes skin irritation. H332 Harmful if inhaled. H350 May cause cancer. H361d Suspected of damaging the unborn child. H373 May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements	:	**Prevention:** P201 Obtain special instructions before use. P260 Do not breathe vapours. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection. **Response:** P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331 Do NOT induce vomiting. **Disposal:** P501 Dispose of contents/container according to the disposal routes specified by law.

Additional Labelling:

Restricted to professional users due to classification as carcinogenic Category 1B, except for fuel uses.

2.3 Other hazards

Remarks	:	The product usually is marketed in the heated state (at approx. 80 to 90 °C). The contact with this product can lead to burns. Particular danger of slippage caused by the escaped or spilled product. The product is delivered and transported at a temperature below 60 °C. According to the results of current assessment(s), contains no substance assessed to be a PBT or a vPvB

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

not applicable

3.2 Mixtures

Chemical nature	hydrocarbons

Hazardous ingredients

Chemical Name	Index-No. CAS-No. EINECS-No./ELINCS No. Registration number	Classification (EC Regulation No 1272/2008)	Concentration [%W/W]
Distillates (petroleum), petroleum residues vacuum	649-034-00-3 68955-27-1 273-263-4 01-2119489711-31-0030	Acute Tox. 4; H332 Repr. 2; H361d Carc. 1B; H350 STOT RE 2; H373 Aquatic Acute 1; M-Factor = 1; H400 Aquatic Chronic 1; M-Factor = 1; H410	45,00 - 90,00
Distillates (petroleum), light catalytic cracked	649-435-00-3 64741-59-9 265-060-4 01-2119489734-23-0045	Acute Tox. 4; H332 Skin Irrit. 2; H315 Asp. Tox. 1; H304 Carc. 1B; H350 STOT RE 2; H373 Aquatic Acute 1; M-Factor = 1; H400 Aquatic Chronic 1; M-Factor = 1; H410 Flam. Liq. 3; H226	0,00 - 35,00
Distillates (petroleum), heavy catalytic cracked	649-010-00-2 64741-61-3 265-063-0 01-2119486893-20-0009	Acute Tox. 4; H332 Asp. Tox. 1; H304 Repr. 2; H361d Carc. 1B; H350 STOT RE 2; H373 Aquatic Acute 1; M-Factor = 1; H400 Aquatic Chronic 1; M-Factor = 1; H410	0,00 - 20,00

These values do not represent any product specification / max. possible mass percentages for classification
For the full text of classifications referred to in this section and H-phrases, see Section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice	:	Own protection of the first responders to be considered.
Inhalation	:	After inhaling the vapours during an accident affected persons are to be taken to the fresh air. If required artificial respiration and/or cardiac massage to be applied. In case of persistent discomforts a doctor is to be consulted.
Skin contact	:	After skin contact wash it thoroughly off using water and soap, contaminated clothing is to be taken off. Any accident occured in the processing phase (80-90°C) can cause severe burns: call emergency services and cool down the affected area if the burn is small(by washing it with cold water and applying a cold wet bandage) or use the thermal sheet from the first aid kit (in the case of large burns).
Eye contact	:	Upon the contact with the eye rinse for 10-15 minutes under running water and with the lids forced apart or by means of the eye rinsing bottle for several minutes. In case of persistent discomforts an ophthalmologist is to be consulted.
Ingestion, Intake into the Lungs	:	Do not induce vomiting. Consulting a doctor. In case of suspicion (vomiting, coughing, breathing troubles) a doctor is to be consulted.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	no information
Effects	:	no information

4.3 Indication of immediate medical attention and special treatment needed

Treatment	:	Upon the absorption of doses of more than 1 to 2 ml per kg of body weight activated carbon (approx. 50 g) is to be given and the person hospitalised. Sedative medicaments (upon medical advice) to be applied in the case of strong excitation.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	:	If the source of fire is small: extinguishing powder, foam or carbon dioxide. In the case of a large source of fire: foam.
Unsuitable extinguishing media	:	Water in a full jet;

5.2 Special hazards arising from the substance or mixture

Particular hazards due to the substance or the preparation, its products of combustion, or the gases produced during the combustion	:	Evaporated product is heavier than air and rests close to the bottom. The vapours can produce an explosive mixture together with air. Prevent the penetration into the sewer system and rooms at low levels. Prevent the penetration into the soil and waters.

5.3 Advice for firefighters

Special protecting equipment	:	Use a respiratory protecting device independent from the ambient air (insulating device) and in the case of a massive release and/or production of pollutants an absolutely tight chemical protection suit.
Further information	:	Containers in the close environment are to be cooled immediately using water spraying and removed from the dangerous zone, if possible. Fire residues and contaminated extinguishing water have to be properly disposed of in accordance with the local official regulations

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Approaching only in the direction of the wind (changes of the wind directions to be considered). Hazardous area to be determined and sealed off. Keep unconcerned persons off the site. Affected rooms to be ventilated thoroughly. Avoid contact with the skin. First-aiders must wear personal protective equipment.

6.2 Environmental precautions

Environmental precautions	:	Escaping point to be sealed. Preventing the penetration into the sewer system, surface waters, and the groundwater by erecting sand and/or earth blockings or by means of other suitable blocking measures. In the case of escapes into surface waters, the sewer system, or into the soil the competent authorities are to be informed.

6.3 Methods and materials for containment and cleaning up

Suitable processes for cleaning or absorption or containment	:	Major amounts to be aspirated or pumped over. Residual amounts to be absorbed and/or contained using non-flammable absorbing material like e.g. sand, earth, or oil binding agents. All waste is to be filled in properly marked hazardous goods containers and disposed of in accordance with the official regulations.
Unsuitable processes for cleaning or absorption or containment	:	No data available

6.4 Reference to other sections

See also section 8 (personal protective equipment) and 13 (disposal).

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Information on the safe handling	:	Obtain special instructions before use. Only use within closed apparatuses. Vapours to be aspirated at the outlet point. If required ventilation of the room at the bottom level. Contact with the skin, eyes, and clothing to be avoided. Spilling of the product to be avoided. Measures against electrostatical charging to be taken.
Advice on protection against fire and explosion	:	Evaporated product is heavier than air and rests close to the bottom. The vapours can produce an explosive mixture together with air. Prevent the penetration into the sewer system and rooms at low levels. Prevent the penetration into the soil and waters. Measures against electrostatical charging to be taken. All devices to be earthed or connected via conductors. Sources of ignition to be kept off.

See also section 8 (personal protective equipment) and 13 (disposal).

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Mobile containers to be kept tightly closed and at a thoroughly ventilated place. Only approved stationary containers to be used. All tanks and devices to be earthed or connected via conductors. Storage upon a suitable underground. Normally, a tightly sealed and resistant storage room is required.
Further information on storage conditions	:	Heat influences to be avoided. Sources of ignition to be kept off.
Advice on common storage	:	Do not store together with explosive hazardous substances (LGK 1), gases (LGK 2 A), other explosive hazardous substances (LGK 4.1 A), highly oxidising hazardous substances (LGK 5.1 A), ammonium nitrate and preparations containing ammonium nitrate (LGK 5.1 C), organic peroxides and self-reactive hazardous substances (LGK 5.2), infectious substances (LGK 6.2) and radioactive substances (LGK 7). Restrictions for storage with pyrophoric or self-heating hazardous substances (LGK 4.2), hazardous substances which develop flammable gases upon contact with water (LGK 4.3) and oxidising hazardous substances (LGK 5.1 B). Due to specific storage instructions and because of particular properties of the substances within a storage facility, other restrictions may result from the assessment of the hazards.

7.3 Specific end use(s)

Information relating to special applications	:	To be used only for the intended purpose. For information on specific uses refer to the exposure scenarios in the annex.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational limit value of the product

No data known

Occupational limit value of the components

No data known

Biological limit values of the product

No data known

Biological limit values of the components

No data known

DNEL or DMEL of product

Not applicable for mixtures.

DNEL or DMEL of compounds

Distillates (petroleum), petroleum residues vacuum	:	End Use: worker Exposure routes: acute, inhalation Exposure time: 15 min Value: 4700 mg/m3 DNEL, (systemic)
		End Use: worker Exposure routes: long-term, dermal Exposure time: 8 h Value: 0,065 mg/kg DNEL, (systemic)
		End Use: worker Exposure routes: long-term, inhalation Exposure time: 8 h Value: 0,12 mg/m3 DNEL, (systemic)
Distillates (petroleum), heavy catalytic cracked	:	End Use: worker Exposure routes: acute, inhalation Exposure time: 15 min Value: 4700 mg/m3 DNEL, (systemic)
		End Use: worker Exposure routes: long-term, dermal Exposure time: 8 h Value: 0,065 mg/kg DNEL, (systemic)
		End Use: worker Exposure routes: long-term, inhalation Exposure time: 8 h Value: 0,12 mg/m3 DNEL, (systemic)
Distillates (petroleum), light catalytic cracked	:	End Use: worker Exposure routes: acute, inhalation Exposure time: 15 min Value: 2230 mg/m3 DNEL, (systemic), (for lethality)
		End Use: worker Exposure routes: long-term, dermal Exposure time: 8 h Value: 2,4 mg/kg DNEL, (systemic)

		End Use: worker Exposure routes: long-term, inhalation Exposure time: 8 h Value: 30 mg/m3 DNEL, (systemic)

PNEC of product

Not applicable for mixtures.

PNEC of compounds

Distillates (petroleum), petroleum residues vacuum	:	For the substance no single PNEC can be given since it is a UVCB;
Distillates (petroleum), heavy catalytic cracked	:	For the substance no single PNEC can be given since it is a UVCB;
Distillates (petroleum), light catalytic cracked	:	For the substance no single PNEC can be given since it is a UVCB;

8.2 Exposure controls

To be used only for the intended purpose., For information on specific uses refer to the exposure scenarios in the annex.

General safety measures

Hygiene measures	:	Any contact with the eyes, the skin, and clothing to be avoided. Clothing contaminated by that substance to be changed immediately and not to be reused before its cleaning. 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.

Personal protective equipment

Respiratory protection	:	When vapours are produced: respiratory protecting and filtering device with gas filter A, characteristic colour: brown (A1 up to 0,1 % vv, A2 up to 0,5 % vv, A3 up to 1 % vv) to be used. In the case of high concentrations and ambiguous situations a respiratory protecting device independent from the ambient air (breathing apparatus) to be used.
Hand protection	:	Because of the great number of influence factors (e.g. temperature, mechanical stress) the duration of use of the recommended chemical protection gloves can be shorter than the penetration time determined in accordance with EN 374. In case of possible hand contact, wear liquid-proof protective gloves. Choose proper gloves when handling the hot product, lines, etc.! **Material: Nitrile ;** Break through time: 480 min Strength of material: 0,40 mm Test method: DIN EN 374 **Material: Viton;** Break through time: 480 min Strength of material: 0,70 mm Test method: DIN EN 374 **Material: Butyl;** Break through time: 120 min Strength of material: 0,70 mm Test method: DIN EN 374 **Material: Polychloroprene;** Break through time: 60 min Strength of material: 0,60 mm Test method: DIN EN 374
Eye/face protection	:	Fully protecting goggles or protecting screen if there is a danger of splashing. Otherwise goggles with side protection.
Body protection	:	Permanently flame retardant and permanently anti-static, solvent-resistant and impervious protective clothing.

Limitations and supervision of the exposure of the environment

Limitations and supervision of the exposure of the environment	:	Only use within closed apparatuses. At risk of exposure, suitable extraction should be carried out. Emission limits to be respected, cleaning of the exhaust air to be provided (if required). When transported in vessels that may break suitable outer containers are to be used. Also refer to section 6 "Measures in the cases of accidental release"
Limitation and monitoring of environmental exposure for specific applications	:	See exposure scenarios in Annex

8.3 Additional advice

In a concrete case and following an individual assessment of the hazards another personal protecting equipment may be required.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	:	viscous liquid
Aggregate condition	:	liquid
Colour	:	dark brownish black
Odour	:	hydrocarbon-like
Odour threshold	:	Odour perceptible

Characteristics	Values	Method	Note
pH			not applicable
Melting point/Freezing point	< 15 °C	ISO 3016	Pour Point
start of boiling	ca. 260 °C	ASTM D 1160	Start of cracking
Flash point	> 66 °C	EN ISO 2719	
Evaporation rate			not applicable
Change of state: solid - gaseous			---
Lower explosion limit	ca. 0,6 %(V)	Literature data	
Upper explosion limit	ca. 6,5 %(V)	Literature data	
Vapour pressure			insignificant
Vapour density			not applicable
Density	970 - 990 kg/m3 at 15 °C	EN ISO 3675	
Relative density			not relevant;
Water solubility			practically insoluble
Solubility(ies)			Fat solubility: not determined
Partition coefficient (n-octanol/water)			not determined
Auto-ignition temperature	> 220 °C		Literature data

Characteristics	Values	Method	Note
Decomposition temperature			not determined
Viscosity, kinematic	50 - 180 mm2/s at 50 °C	ASTM D 7042	
Viscosity, dynamic			not determined
Explosive properties			not explosive
Oxidising properties		Derivation from chemical structure	non-oxidising

9.2 Other information

no data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

chemically stable

10.2 Chemical stability

chemically stable

10.3 Possibility of hazardous reactions

Hazardous reactions : not known

10.4 Conditions to avoid

Conditions to avoid : None, if the provisions in this document are observed.

10.5 Incompatible materials

Materials to avoid : strong acids and oxidizing agents;

10.6 Hazardous decomposition products

Hazardous decomposition products : not determined

10.7 Additional advice

no information

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Acute oral effect	:	for the mixture no data available
Acute oral effect Distillates (petroleum), petroleum residues vacuum	:	LD50 rat Dose: > 5000 mg/kg bw Method: EU Method B.1 bis Test substance: 68476-33-5
Acute oral effect Distillates (petroleum), heavy catalytic cracked	:	LD50 rat Dose: 4.320 mg/kg bw Method: OECD 401 Test substance: 64741-62-4
Acute oral effect Distillates (petroleum), light catalytic cracked	:	LD50 rat Dose: 3200 mg/kg bw Method: OECD 401
Acute inhaling effect	:	for the mixture no data available
Acute inhaling effect Distillates (petroleum), petroleum residues vacuum	:	LC50 rat Dose: 4.100 mg/m3 / 4 h Method: EPA OTS 798.1150 Test substance: 64741-62-4
Acute inhaling effect Distillates (petroleum), heavy catalytic cracked	:	LC50 rat Dose: 4.100 mg/m3 / 4 h Method: EPA OTS 798.1150 Test substance: 64741-62-4
Acute inhaling effect Distillates (petroleum), light catalytic cracked	:	LC50 rat Dose: 4,65 ml/l air/ 4 h Method: OECD 403

Acute dermal effect	:	for the mixture no data available
Acute dermal effect Distillates (petroleum), petroleum residues vacuum	:	LD50 rabbit Dose: >2000 mg/kg bw Method: EU Method B.3 Test substance: 68476-33-5
Acute dermal effect Distillates (petroleum), heavy catalytic cracked	:	LD50 rabbit Dose: > 2.000 mg/kg Method: OECD 434 Test substance: 64741-62-4
Acute dermal effect Distillates (petroleum), light catalytic cracked	:	LD50 rabbit Dose: >2000 mg/kg bw Method: OECD 402
Acute effect (other)	:	for the mixture no data available
Acute effect (other) Distillates (petroleum), petroleum residues vacuum	:	no data available
Acute effect (other) Distillates (petroleum), heavy catalytic cracked	:	no data available
Acute effect (other) Distillates (petroleum), light catalytic cracked	:	no data available
Other effects	:	for the mixture no data available

Other effects Distillates (petroleum), petroleum residues vacuum	:	no information
Other effects Distillates (petroleum), heavy catalytic cracked	:	no information
Other effects Distillates (petroleum), light catalytic cracked	:	no information

Skin corrosion/irritation

Skin irritation	:	for the mixture no data available
Skin irritation Distillates (petroleum), petroleum residues vacuum	:	Rabbit skin Result: mild irritation Method: EU Method B.4 Test substance: 68476-33-5
Skin irritation Distillates (petroleum), heavy catalytic cracked	:	Rabbit skin Result: mild irritation Method: EU Method B.4 Test substance: 64741-62-4 Dose: 0,5 ml
Skin irritation Distillates (petroleum), light catalytic cracked	:	Rabbit skin Result: irritating Method: OECD 404 Dose: 0,5 ml

Serious eye damage/eye irritation

Eye irritation	:	for the mixture no data available
Eye irritation Distillates (petroleum), petroleum residues vacuum	:	Rabbit eye Result: not irritating Method: EU Method B.5 Test substance: 68476-33-5
Eye irritation Distillates (petroleum), heavy catalytic cracked	:	Rabbit eye Result: not irritating Method: EU Method B.5 Test substance: 64741-62-4 Dose: 0,1 ml
Eye irritation Distillates (petroleum), light catalytic cracked	:	Rabbit eye Result: not irritating Method: OECD 405

Respiratory or skin sensitisation

sensitisation	:	for the mixture no data available

sensitisation Distillates (petroleum), petroleum residues vacuum	:	Buehler Test Guinea pig skin Result: not sensitising Method: EU Method B.6 (Skin Sensitisation) Test substance: 68476-33-5
sensitisation Distillates (petroleum), heavy catalytic cracked	:	Buehler Test Guinea pig skin Result: not sensitising Method: EU Method B.6 (Skin Sensitisation) Test substance: 64741-62-4
sensitisation Distillates (petroleum), light catalytic cracked	:	Buehler Test Guinea pig skin Result: not sensitising Method: OECD 406

Germ cell mutagenicity

Genotoxicity in vitro	:	Remarks: for the mixture no data available
Genotoxicity in vitro Distillates (petroleum), petroleum residues vacuum	:	Ames test Result: positive Method: not determined Test substance: 64741-62-4
Genotoxicity in vitro Distillates (petroleum), petroleum residues vacuum	:	Mouse lymphoma test Result: positive Method: OECD 476 Test substance: 64741-62-4
Distillates (petroleum), petroleum residues vacuum	:	Gene mutation test Result: negative Method: OECD 476 Test substance: 64741-62-4
Genotoxicity in vitro Distillates (petroleum), heavy catalytic cracked	:	Ames test Result: positive Method: not determined Test substance: 64741-62-4
Genotoxicity in vitro Distillates (petroleum), heavy catalytic cracked	:	Mouse lymphoma test Result: positive Method: OECD 476 Test substance: 64741-62-4
Distillates (petroleum), heavy catalytic cracked	:	Gene mutation test Result: negative Method: OECD 476 Test substance: 64741-62-4

Genotoxicity in vitro Distillates (petroleum), light catalytic cracked	:	Modified Ames Test Result: positive Method: OECD 471 Test substance: 64741-82-8
Genotoxicity in vitro Distillates (petroleum), light catalytic cracked	:	Mouse lymphoma test Result: positive with metabolic activation, negative without metabolic activation Method: OECD 476
Genotoxicity in vivo	:	Remarks: for the mixture no data available
Genotoxicity in vivo Distillates (petroleum), petroleum residues vacuum	:	Chromosome aberration test Species: rat Test substance: 64741-57-7 Method: not determined Result: negative
Genotoxicity in vivo Distillates (petroleum), heavy catalytic cracked	:	Chromosome aberration test Species: rat Test substance: 64741-62-4 Method: OECD 475 Result: negative
Genotoxicity in vivo Distillates (petroleum), heavy catalytic cracked	:	micronucleus assay (clastogenicity) Species: mouse Test substance: 64741-62-4 Method: EU Method B.12 Result: negative
Distillates (petroleum), heavy catalytic cracked	:	Sister Chromatid Exchange Assay Species: mouse Test substance: 64741-62-4 Method: not determined Result: negative
Distillates (petroleum), heavy catalytic cracked	:	UDS test (unscheduled DNA synthesis) Species: rat Test substance: 64741-62-4 Method: EU Method B.39 Result: negative
Genotoxicity in vivo Distillates (petroleum), light catalytic cracked	:	Chromosome aberration test Method: OECD 475 Result: negative
Toxicological Assessment Germ cell mutagenicity	:	Based on the available data the product is not classified as mutagenic.
Toxicological Assessment Germ cell mutagenicity Distillates (petroleum), petroleum residues vacuum	:	Based on the available data the substance is not classified as mutagenic.
Toxicological Assessment Germ cell mutagenicity Distillates (petroleum), heavy catalytic cracked	:	Based on the available data the substance is not classified as mutagenic.

Toxicological Assessment Germ cell mutagenicity Distillates (petroleum), light catalytic cracked	:	Based on the available data the substance is not classified as mutagenic.

Carcinogenicity

Carcinogenic effect	:	for the mixture no data available
Carcinogenic effect Distillates (petroleum), petroleum residues vacuum	:	mouse Test substance: 64741-62-4 Method: not determined LOAEC Dose: 1% NOAEL Dose: 0,1% Result: positive
Carcinogenic effect Distillates (petroleum), heavy catalytic cracked	:	mouse Test substance: 64741-62-4 Method: not determined LOAEC Dose: 1% NOAEL Dose: 0,1% Result: positive
Carcinogenic effect Distillates (petroleum), light catalytic cracked	:	Skin test on mouse Method: OECD 451 positive
Toxicological Assessment Carcinogenicity	:	Based on the components, the product is classified as carcinogenic
Toxicological Assessment Carcinogenicity Distillates (petroleum), petroleum residues vacuum	:	Based on the available data, the substance is classified as carcinogenic.
Toxicological Assessment Carcinogenicity Distillates (petroleum), heavy catalytic cracked	:	Based on the available data, the substance is classified as carcinogenic.
Toxicological Assessment Carcinogenicity Distillates (petroleum), light catalytic cracked	:	Classified as carcinogenic

Toxicity to reproduction

Reproduction toxicity/fertility	:	for the mixture no data available
Reproduction toxicity/fertility Distillates (petroleum), petroleum residues vacuum	:	rat Test substance: 64741-62-4 Method: EPA OTS 798.4700 dermal NOAEL (systemic toxicity): 50 mg/kg/d NOAEL (reproductive toxicity): 250 mg/kg/d
Reproduction toxicity/fertility Distillates (petroleum), heavy catalytic cracked	:	rat Test substance: 64741-62-4 Method: EPA OTS 798.4700 dermal NOAEL (systemic toxicity): 50 mg/kg/d NOAEL (reproductive toxicity): 250 mg/kg/d
Reproduction toxicity/fertility Distillates (petroleum), light catalytic cracked	:	rat Test substance: 64741-82-8 NOAEL (maternal) toxicity 125 mg/kg
Development toxicity/teratogenicity	:	for the mixture no data available

Development toxicity/teratogenicity Distillates (petroleum), petroleum residues vacuum	:	rat Test substance: 64741-57-7 Method: EPA OTS 798.4900 LOAEL: 75 mg/kg (maternal/developmental toxicity) bw/day dermal
Development toxicity/teratogenicity Distillates (petroleum), heavy catalytic cracked	:	rat Test substance: 64741-62-4 Method: EPA OTS 798.4900 NOAEL: Dose 0,05 mg/kg (maternal/developmental toxicity) bw/day dermal
Development toxicity/teratogenicity Distillates (petroleum), light catalytic cracked	:	rat Test substance: 64741-82-8 NOAEL (fetale) toxicity Dose: 50 mg/kg bw /d
Toxicological Assessment **Development toxicity/teratogenicity** **Reproduction toxicity/fertility**	:	Based on the available data the product is not classified as toxic to reproduction (fertility). Based on the available data the product is classified as teratogenic.
Toxicological Assessment **Development toxicity/teratogenicity** **Reproduction toxicity/fertility** Distillates (petroleum), petroleum residues vacuum	:	Reproduction toxicity Repr.Cat.2 H361d - Suspected of damaging the unborn child., No classification criteria for fertility
Toxicological Assessment **Development toxicity/teratogenicity** **Reproduction toxicity/fertility** Distillates (petroleum), heavy catalytic cracked	:	Reproduction toxicity Repr.Cat.2 H361d - Suspected of damaging the unborn child., No classification criteria for fertility
Toxicological Assessment **Development toxicity/teratogenicity** **Reproduction toxicity/fertility** Distillates (petroleum), light catalytic cracked	:	no classification criteria for reproductive toxicity and teratogenicity, No classification criteria for fertility

Specific Target Organ Toxicity - Single exposure

Specific Target Organ Toxicity - Single exposure	:	for the mixture no data available
Specific Target Organ Toxicity - Single exposure Distillates (petroleum), petroleum residues vacuum	:	Based on the available data, not classified in respect to specific target organ toxicity upon single exposure.
Specific Target Organ Toxicity - Single exposure Distillates (petroleum), heavy catalytic cracked	:	Based on the available data, not classified in respect to specific target organ toxicity upon single exposure.
Specific Target Organ Toxicity - Single exposure Distillates (petroleum), light catalytic cracked	:	Based on the available data, not classified in respect to specific target organ toxicity upon single exposure.

Specific Target Organ Toxicity - Repeated exposure

Effect upon repeated or longtime exposure	:	for the mixture no data available
Effect upon repeated or longtime exposure Distillates (petroleum), petroleum residues vacuum	:	May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. (STOT RE 2 H373)
Effect upon repeated or longtime exposure Distillates (petroleum), heavy catalytic cracked	:	May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. (STOT RE 2 H373)
Effect upon repeated or longtime exposure Distillates (petroleum), light catalytic cracked	:	May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. (STOT RE 2 H373)

Aspiration hazard

Aspiration toxicity	:	May cause lung damage when swallowed.
Aspiration toxicity Distillates (petroleum), petroleum residues vacuum	:	not applicable
Aspiration toxicity Distillates (petroleum), heavy catalytic cracked	:	Due to low viscosity the substance presents an aspiration hazard
Aspiration toxicity Distillates (petroleum), light catalytic cracked	:	May cause lung damage when swallowed.

Neurological effects

Neurological effects	:	for the mixture no data available
Neurological effects Distillates (petroleum), petroleum residues vacuum	:	no data available
Neurological effects Distillates (petroleum), heavy catalytic cracked	:	no data available
Neurological effects Distillates (petroleum), light catalytic cracked	:	no data available
Narcotic effect	:	for the mixture no data available
Narcotic effect Distillates (petroleum), petroleum residues vacuum	:	no data available
Narcotic effect Distillates (petroleum), heavy catalytic cracked	:	no data available
Narcotic effect Distillates (petroleum), light catalytic cracked	:	no data available

Toxicological Assessment

Repeated dose toxicity	:	for the mixture no data available
Repeated dose toxicity Distillates (petroleum), petroleum residues vacuum	:	LOAEL rat, dermal Dose: 497 mg/kg bw/day (systemic) Dose: 2483 mg/kg bw/day (local) Test substance: 68476-33-5
Repeated dose toxicity Distillates (petroleum), heavy catalytic cracked	:	rat,NOAEL dermal Dose: 1,06 mg/kg/d (systemic) Dose: 53 - 106 mg/kg/d (local) Method: EPA OTS 870.3250 Test substance: 64741-62-4
Repeated dose toxicity Distillates (petroleum), light catalytic cracked	:	NOAEL rat, dermal Dose: 25 mg/kg bw/day (male) (systemic) Dose: 125 mg/kg bw/day (female) (systemic) Method: OECD 411

11.2 Additional advice

Further information	:	for the mixture no data available
Further information Distillates (petroleum), petroleum residues vacuum	:	no information
Further information Distillates (petroleum), heavy catalytic cracked	:	no information
Further information Distillates (petroleum), light catalytic cracked	:	no information

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity

Acute toxicity for fish	:	for the mixture no data available
Acute toxicity for fish Distillates (petroleum), petroleum residues vacuum	:	LL50 Species: Oncorhynchus mykiss (rainbow trout) Dose: 79 mg/l Exposure time: 96 h Test substance: 68476-33-5 Method: OECD 203
Acute toxicity for fish Distillates (petroleum), heavy catalytic cracked	:	LL50 Species: Oncorhynchus mykiss (rainbow trout) Dose: > 95 mg/l Exposure time: 96 h Test substance: 68476-33-5 Method: OECD 203
Acute toxicity for fish Distillates (petroleum), light catalytic cracked	:	LL50 Species: Oncorhynchus mykiss (rainbow trout) Dose: 0,3 mg/l Exposure time: 96 h Method: OECD 203
Acute toxicity for aquatic invertebrates	:	for the mixture no data available
Acute toxicity for aquatic invertebrates Distillates (petroleum), petroleum residues vacuum	:	EL50 Species: Daphnia magna (large water flea) Dose: 2 mg/l Exposure time: 48 h Test substance: 68476-33-5 Method: OECD 202

Acute toxicity for aquatic invertebrates Distillates (petroleum), heavy catalytic cracked	:	EL50 Species: Daphnia magna (large water flea) Dose: 0,22 mg/l Exposure time: 48 h Test substance: 64741-61-3 Method: OECD 202
Acute toxicity for aquatic invertebrates Distillates (petroleum), light catalytic cracked	:	EL50 Species: Daphnia magna (large water flea) Dose: 0,319 mg/l Exposure time: 48 h Test substance: Cracked gas oils Method: (Q)SAR
Toxicity for algae and aquatic plants	:	for the mixture no data available
Toxicity for algae and aquatic plants Distillates (petroleum), petroleum residues vacuum	:	EL50 Species: Pseudokirchneriella subcapitata Dose: > 30 mg/l Exposure time: 72 h Test substance: 68476-33-5 Method: OECD 201
Toxicity for algae and aquatic plants Distillates (petroleum), heavy catalytic cracked	:	EL50 Species: Pseudokirchneriella subcapitata Dose: 0,32 mg/l Exposure time: 72 h Test substance: 64741-61-3 Method: OECD 201
Toxicity for algae and aquatic plants Distillates (petroleum), light catalytic cracked	:	EL50 Species: Pseudokirchneriella subcapitata Dose: 0,51 mg/l Exposure time: 72 h Test substance: Cracked gas oils Method: OECD 201

Toxicity for micro-organisms	:	for the mixture no data available
Toxicity for micro-organisms Distillates (petroleum), petroleum residues vacuum	:	NOEL Species: Tetrahymena pyriformis Dose: 14,91 mg/l Exposure time: 72 h Test substance: heavy fuel oil Method: QSAR
Toxicity for micro-organisms Distillates (petroleum), heavy catalytic cracked	:	LL50 Species: Tetrahymena pyriformis Dose: > 1.000 mg/l Exposure time: 72 h Test substance: heavy fuel oil Method: QSAR
Toxicity for micro-organisms Distillates (petroleum), light catalytic cracked	:	EL50 Species: Tetrahymena pyriformis Dose: 1,954 mg/l Exposure time: 40 h Test substance: Cracked gas oils Method: QSAR
Toxicity for micro-organisms Distillates (petroleum), light catalytic cracked	:	NOEL Species: Tetrahymena pyriformis Dose: 0,241 mg/l Test substance: Cracked gas oils Method: QSAR
Toxicity to edaphic organisms	:	for the mixture no data available
Toxicity to edaphic organisms Distillates (petroleum), petroleum residues vacuum	:	no data available
Toxicity to edaphic organisms Distillates (petroleum), heavy catalytic cracked	:	no data available
Toxicity to edaphic organisms Distillates (petroleum), light catalytic cracked	:	no data available
Toxicity for terrestrial plants	:	for the mixture no data available
Toxicity for terrestrial plants Distillates (petroleum), petroleum residues vacuum	:	no data available
Toxicity for terrestrial plants Distillates (petroleum), heavy catalytic cracked	:	no data available
Toxicity for terrestrial plants Distillates (petroleum), light catalytic cracked	:	no data available
Toxicity to other terrestrial non -mammalian organisms	:	for the mixture no data available

Toxicity to other terrestrial non -mammalian organisms Distillates (petroleum), petroleum residues vacuum	:	NOAEL Species: Anas platyrhynchos Dose: 12 ml/kg/day Exposure time: 154 d Test substance: weathered North Slope crude oil (WEVC) Method: OECD 206 Nutrition
Toxicity to other terrestrial non -mammalian organisms Distillates (petroleum), heavy catalytic cracked	:	NOAEL Species: Anas platyrhynchos Dose: 20000 mg/kg Exposure time: 154 d Test substance: weathered North Slope crude oil (WEVC) Method: OECD 206 Nutrition
Toxicity to other terrestrial non -mammalian organisms Distillates (petroleum), light catalytic cracked	:	no data available

Chronic toxicity

Toxicity to fish (Chronic toxicity)	:	for the mixture no data available
Toxicity to fish (Chronic toxicity) Distillates (petroleum), petroleum residues vacuum	:	NOEL Species: Oncorhynchus mykiss (rainbow trout) Dose: 0,1 mg/l Exposure time: 28 d Test substance: heavy fuel oil Method: QSAR
Toxicity to fish (Chronic toxicity) Distillates (petroleum), heavy catalytic cracked	:	NOEL Species: Oncorhynchus mykiss (rainbow trout) Dose: 0,1 mg/l Exposure time: 28 d Test substance: heavy fuel oil Method: QSAR
Toxicity to fish (Chronic toxicity) Distillates (petroleum), light catalytic cracked	:	NOEL Species: Oncorhynchus mykiss (rainbow trout) Dose: 0,029 mg/l Exposure time: 14 d Test substance: Cracked gas oils Method: QSAR

Toxicity to daphnia and other aquatic invertebrates. (Chronic toxicity)	:	Remarks: for the mixture no data available
Toxicity to daphnia and other aquatic invertebrates. (Chronic toxicity) Distillates (petroleum), petroleum residues vacuum	:	NOEL Species: Daphnia magna Dose: 0,27 mg/l Exposure time: 21 d Test substance: heavy fuel oil Method: (Q)SAR
Toxicity to daphnia and other aquatic invertebrates. (Chronic toxicity) Distillates (petroleum), heavy catalytic cracked	:	NOEL Species: Daphnia magna Dose: 0,27 mg/l Exposure time: 21 d Test substance: heavy fuel oil Method: (Q)SAR
Toxicity to daphnia and other aquatic invertebrates. (Chronic toxicity) Distillates (petroleum), light catalytic cracked	:	EL50 Species: Daphnia magna Dose: 0,053 mg/l Exposure time: 21 d Test substance: Cracked gas oils Method: (Q)SAR

Ecotoxicological Assessment

Aquatic Acute	:	Very toxic to aquatic organisms.
Aquatic Acute Distillates (petroleum), petroleum residues vacuum	:	Very toxic to aquatic organisms.
Aquatic Acute Distillates (petroleum), heavy catalytic cracked	:	Very toxic to aquatic organisms.
Aquatic Acute Distillates (petroleum), light catalytic cracked	:	Very toxic to aquatic organisms.
Aquatic Chronic	:	Very toxic to aquatic life with long lasting effects.
Aquatic Chronic Distillates (petroleum), petroleum residues vacuum	:	Very toxic to aquatic life with long lasting effects.
Aquatic Chronic Distillates (petroleum), heavy catalytic cracked	:	Very toxic to aquatic life with long lasting effects.
Aquatic Chronic Distillates (petroleum), light catalytic cracked	:	Very toxic to aquatic life with long lasting effects.

Toxicity Data on Soil	:	for the mixture no data available
Toxicity Data on Soil Distillates (petroleum), petroleum residues vacuum	:	no information
Toxicity Data on Soil Distillates (petroleum), heavy catalytic cracked	:	no information
Toxicity Data on Soil Distillates (petroleum), light catalytic cracked	:	no data available
Other organisms relevant to the environment	:	for the mixture no data available
Other organisms relevant to the environment Distillates (petroleum), petroleum residues vacuum	:	no information
Other organisms relevant to the environment Distillates (petroleum), heavy catalytic cracked	:	no information
Other organisms relevant to the environment Distillates (petroleum), light catalytic cracked	:	no data available

12.2 Persistence and degradability

Persistence,Biodegradability	:	for the mixture no data available
Persistence, Biodegradability Distillates (petroleum), petroleum residues vacuum	:	No relevant data available
Persistence, Biodegradability Distillates (petroleum), heavy catalytic cracked	:	No relevant data available
Persistence, Biodegradability Distillates (petroleum), light catalytic cracked	:	inherently biodegradable.

12.3 Bioaccumulative potential

Bioaccumulation	:	for the mixture no data available Bioconcentration (Partition coefficient (n-octanol/water)): not determined
Bioaccumulation Distillates (petroleum), petroleum residues vacuum	:	no data available
Bioaccumulation Distillates (petroleum), heavy catalytic cracked	:	no data available

Bioaccumulation Distillates (petroleum), light catalytic cracked	:	no data available

12.4 Mobility in soil

Mobility	:	Remarks: Do not allow the product to be released uncontrolled into the environment.
Transport between environmental compartments	:	The product is insoluble and floats on water. It is immobilized by adsorption to the soil particles.
Transport between environmental compartments Distillates (petroleum), petroleum residues vacuum	:	Air (%) 4,55; Water (%) 0,01; Soil (%) 67,81; Sediment (%) 27,63. PETRORISK
Transport between environmental compartments Distillates (petroleum), heavy catalytic cracked	:	Air (%) 4,55; Water (%) 0,01; Soil (%) 67,81; Sediment (%) 27,63. PETRORISK
Transport between environmental compartments Distillates (petroleum), light catalytic cracked	:	Air (%) 65,79; Water (%) 1,09; Soil (%) 23,25; Sediment (%) 9,87. PETRORISK
Physical-chemical eliminability	:	The product is insoluble and floats on water. May be separated mechanically in waste water plants.

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	:	According to the results of current assessment(s), contains no substance assessed to be a PBT or a vPvB
Results of PBT and vPvB assessment Distillates (petroleum), petroleum residues vacuum	:	No representative hydrocarbon structures were found to meet the PBT or vPvB criteria except for anthracene (a known PBT), which, however, is not present in the substance at greater 0.1%.
Results of PBT and vPvB assessment Distillates (petroleum), heavy catalytic cracked	:	No representative hydrocarbon structures were found to meet the PBT or vPvB criteria except for anthracene (a known PBT), which, however, is not present in the substance at greater 0.1%.
Results of PBT and vPvB assessment Distillates (petroleum), light catalytic cracked	:	No representative hydrocarbon structures were found to meet the PBT or vPvB criteria except for anthracene (a known PBT), which, however, is not present in the substance at greater 0.1%.

12.6 Other adverse effects

Effects upon sewage treatment plants	:	for the mixture no data available
Effects upon sewage treatment plants Distillates (petroleum), petroleum residues vacuum	:	no information
Effects upon sewage treatment plants Distillates (petroleum), heavy catalytic cracked	:	no information
Effects upon sewage treatment plants Distillates (petroleum), light catalytic cracked	:	no information

Other adverse effects	:	Do not discharge liquid hydrocarbons into sewer system, water bodies and prevent from entering the ground. In the case of accidents call for assistance by professional oil-fighting forces. Liquid at transportation and storage temperature.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Information on the disposal of the product	:	Product residues are to be disposed of in accordance with the legal stipulations.
Contaminated packaging	:	If the product has been supplied within a packaging, the empty original containers are to be reused preferably or, if this is not possible, they are to be recycled preferably.
Disposal key according to European disposal index when using as described in Section 1.:		
Waste from residues	:	13 07 03* other fuels [incl. mixtures]
Contaminated packaging	:	15 01 10* packaging which contain residues of hazardous substances or which are contaminated by hazardous substances

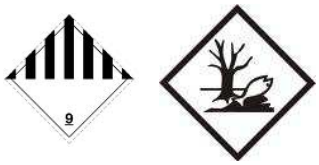
13.2 Additional advice

The Waste Code depends on the origin of the waste and can deviate from the above data in a specific case.

Legislation on the disposal of product wastes:
Law no. 211/2011 on the waste management;
Government Decision no. 235/2007 on the disposal of waste oils;
Ordinance of the Minister for Water Management and Protection of the Environment no. 756/2004 in view of the approval of the technical regulations concerning the incineration of wastes;
Government Decision no. 349/2005 on the storage of wastes, as further amended and completed;
Government Decision no. 856/2002 on the documentary evidence to be submitted by the waste management companies and on the approval of the wastes lists, including the hazardous wastes, as further amended and completed;
Government Decision 1061/2008 for the transport of hazardous and non-hazardous goods inside Romania.

Legal stipulations on packing wastes:
Order no. 794/2012 on the procedure to report data concerning packaging and packaging waste;
Law no. 249/2015 on the management of packaging and packaging wastes;

SECTION 14. TRANSPORT INFORMATION



Road transport (ADR)

14.1	**UN no.**	:	3082
14.2	**Proper shipping name**	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY FUEL OIL)
14.3	**Transport hazard class**	:	9
14.4	**Packing group**	:	III
14.5	**Environmentally hazardous**	:	yes
14.6	**Special precautions for users**	:	See section 7 and references therein.

Further information

Number to designate the hazard	:	90
ADR/RID-Labels	:	9
Classification Code	:	M6
Tunnel restriction code	:	(E)
Advice	:	Danger Label No 9, Fish and tree - Environmentally hazardous substance mark

Rail transport (RID)

14.1	**UN no.**	:	3082
14.2	**Proper shipping name**	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY FUEL OIL)
14.3	**Transport hazard class**	:	9
14.4	**Packing group**	:	III
14.5	**Environmentally hazardous**	:	yes
14.6	**Special precautions for users**	:	See section 7 and references therein.

Further information

Number to designate the hazard	:	90
ADR/RID-Labels	:	9
Classification Code	:	M6

Advice	:	Danger Label No 9, Fish and tree - Environmentally hazardous substance mark

Inland navigation with tanker barges (ADN)

14.1	**UN no.**	:	3082
14.2	**Proper shipping name**	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY FUEL OIL)
14.3	**Transport hazard class**	:	9
14.4	**Packing group**	:	III
14.5	**Environmentally hazardous**	:	yes
14.6	**Special precautions for users**	:	See section 7 and references therein.

Further information

Advice	:	(N1+CMR+F)

Sea transport (IMDG)

14.1	**UN no.**	:	3082
14.2	**Proper shipping name**	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY FUEL OIL)
14.3	**Transport hazard class**	:	9
14.4	**Packing group**	:	III
14.5	**Marine pollutant**	:	yes
14.6	**Special precautions for users**	:	See section 7 and references therein.
14.7	**Transport in bulk according to Annex II of MARPOL and the IBC Code**	:	MARPOL Annex 1

Further information

ICAO hazard labels	:	9
EmS	:	F-A, S-F

Air transport (ICAO-TI/IATA-DGR)

14.1	**UN no.**	:	3082
14.2	**Proper shipping name**	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(HEAVY FUEL OIL)
14.3	**Transport hazard class**	:	9
14.4	**Packing group**	:	III
14.5	**Environmentally hazardous**	:	yes
14.6	**Special precautions for users**	:	See section 7 and references therein.

Further information

ICAO hazard labels	:	9

Additional advice

In case of need further information on the transport classification can be requested from the producer.

SECTION 15. REGULATORY INFORMATION

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

Community provisions on the protection of the health and the environment

Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) - Chapter V - Special provisions for installations and activities using organic solvents.	:	When properly used, product is not subject to VOC-Guideline (see Section 1.2).
Regulation (EC) no. 1907/2006, Annex XVII	:	no. 28 Carcinogenic substances of the categories 1A and/or 1 or the categories 1B and/or 2
Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (SEVESO III).	:	Annex I, Part 1: E1 Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1. Annex I Part 2: 34. Petroleum products and alternative fuels. (d) heavy fuel oils
Council Directive 92/85/EEC of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (tenth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC)	:	This product is subject to the restrictions set by the national legislation transposing the Directive.
Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work	:	This product is subject to the restrictions set by the national legislation transposing the Directive.

Other regulations:
Regulation (CE) 1272/2008 on the classification, labelling and packaging of substances and mixtures, the amendment and repeal of Directives 67/548/CEE and 1999/45/CE, as well as amendment of Regulation (CE) 1907/2006, as further amended and completed.

Law no. 360/2003 on the handling of dangerous chemical substances and preparations, as further amended and completed;
Government Decision no. 1093/2003 for determining the minimum requirements to the safety and health of the workforce in view of preventing the risks of an exposure to carcinogenic or mutagenic substances at the workplace, as further amended and completed;
Regulation (EC) no. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as further amended and completed;
Government Decision no. 1408/2008 on the classification, packing, and labelling of dangerous substances;
Government Decision 477/2009 on the fixing of punitive measures in the event of contravention of the rules of Regulation (EC) 1.907/2006 of the European Parliament and Council on the registration, evaluation, approval and demarcation of chemical materials (REACH), for the founding of the European chemicals agency, the amendment of Directive 1999/45/EC and the repeal of Regulation (EEC) 793/93 of the Council and Regulation (EC) 1.488/94 of the Commission, as well as Directive 76/769/CEE of the Council and Directives 91/155/CEE, 93/67/CEE, 93/105/CE and 2000/21/CE of the Commission.
Government Decision 398 /2010 on the fixing of measures for the adherence to the rules of Regulation (EC) 1.272/2008 of the European Parliament and Council dated 16 December 2008 on the classification, labelling and packaging of materials and mixtures, the amendment and repeal of Directives 67/548/CEE and 1.999/45/CE, as well as amendment of Regulation (CE) 1.907/2006.
Law no. 319/2006 on the safety and health at work as further amended;
Government Decision no. 1218/2006 on the determination of the minimum requirements to the safety and health of the workforce in view of preventing risks caused by chemical substances, as further amended and completed;
Emergency ordinance 122/2010 establishing the penalties applicable for breaches of provisions in the Regulation (EC) 1.272/2008 of the European Parliament and Council dated 16 December 2008 on the classification, labelling and packaging of materials and mixtures, the amendment and repeal of Directives 67/548/EEC and 1.999/45/EC, as well as amendment of Regulation (EC) 1.907/2006, as further amended.
Government Decision no.804/2007 on the control of major accident hazards involving dangerous substances, as further amended and completed.
Emergency ordinance 96/2003 concerning the motherhood protection at workplace, as further modified and completed.
Government Decision 600/2007 concerning the protection of young people at workplace, as further modified and completed.
Government Decision 893/2006 for amending Government Decision 1.593/2002 regarding approval of National Plan for preparedness, response and cooperation in case of marine pollution by hydrocarbons.

15.2 Chemical Safety Assessment

A chemical safety assessment for the main constituent was performed within the framework of the REACH registration. It was verified that control of the main constituent as a lead substance ensures appropriate control of all other constituents of the mixture. Therefore, the scenarios listed in the Annex are those developed for the main substance

SECTION 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Flam. Liq.	Flammable liquids
Repr.	Reproductive toxicity
Skin Irrit.	Skin corrosion/irritation
STOT RE	Specific target organ toxicity - repeated exposure
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H350	May cause cancer.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure.
H400	Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

Further information

Other information	:	Changes by deletion have been implemented in : Section 1.1 Section 2.1 Section 3.1
	:	Overall updates from the previous main version (not marked as stated below) have been implemented in: Section 2.2 Section 3.2 Section 7.2 Section 8.1 Sections 11 and 12 Section 14 Sections 13.2, 15.1 and 16 Annex
	:	List of acronyms: (Q)SAR = Quantitative Structure Activity Relationship ADN = European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road ATE = Acute Toxicity Estimate BCF = bioconcentration factor CAS-No = Chemical Abstracts Service number CMR = Carcinogen, Mutagen, or toxic to Reproduction CSA = Chemical Safety Assessment CSR = Chemical Safety Report DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level EC50 = The effective concentration of substance that causes 50% of the maximum response. ECHA = European Chemicals Agency EC-Number = EINECS and ELINCS Number (see also EINECS and ELINCS) EINECS = European Inventory of Existing Commercial Chemical Substances EL50 = effective load 50% ELINCS = European List of notified Chemical Substances EPA = Environmental Protection Agency GES = Generic Exposure Scenario IATA = International Air Transport Association IC50 = inhibition concentration 50% ICAO-TI = Technical Instructions for the Safe Transport of Dangerous Goods by Air IMDG = International Maritime Dangerous Goods Kow = octanol-water partition coefficient Koc = soil organic carbon-water partitioning coefficient LC50 = Lethal Concentration to 50 % of a test population LD50 = Lethal Dose to 50% of a test population (Median Lethal Dose) LL50 = Lethal Load 50% LOAEC = Lowest Observed Adverse Effect Concentration LOAEL = Lowest Observed Adverse Effect Level NOAEC = No Observed Adverse Effect Concentration NOAEL = No Observed Adverse Effect Level NOEC = No Observed Effect Concentration NOEL = No Observed Effect Level OECD = Organization for Economic Co-operation and Development BLV = Biological Limit Value

	OEL = Occupational Exposure Limit OSHA = European Agency for Safety and Health at work PBT = Persistent, Bioaccumulative and Toxic substance PEC = Predicted Effect Concentration PNEC = Predicted No Effect Concentration RID = Regulations concerning the International Carriage of Dangerous Goods by Rail RMM = Risk Management Measure SVHC = Substances of Very High Concern TRA = Targeted Risk Assessment TLV = Threshold Limit Value STEL = Short term exposure limit TWA = Time-Weighted Average UVCB = substance of unknown or variable composition, complex reaction products or biological materials vPvB = very Persistent and very Bioaccumulative LGK = Storage class TRGS = Technical Rules for Hazardous Substances (Germany)

Markings (|) in the left border and/or text in red indicate changes in the previous main version.
The above data are in accordance with our knowledge and experience at the given date of revision and exclusively refer to the product in its as-delivered condition as it is unambiguously identifiable by the product number. In the case of usages deviating from those given in section 1 or when the product is mixed with other materials or is altered in the course of a production process, the statements given in the material safety data sheet may not apply without restrictions or even not at all any more. The data are not applicable to other products of the same or a similar designation.

Annex

The exposure scenarios for the most frequent applications are listed below. If required, other exposure scenarios will be provided upon request.

1. Brief title of the Exposure Scenario: 01-Manufacture of substance

Main User Groups	:	**SU3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU8:** Manufacture of bulk, large scale chemicals (including petroleum products) **SU9:** Manufacture of fine chemicals
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1:** Manufacture of substances
Further information	:	Specific Environmental Release Category ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	:	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1 Contributing scenario controlling environmental exposure for: ERC1: Manufacture of substances

Amount used

Remarks	:	Substance is complex UVCB. Predominantly hydrophobic.
Regional use tonnage	:	15 10E6 t/y
Fraction of EU tonnage used in region:	:	0,1
Fraction of Regional tonnage used locally:	:	1
Annual site tonnage (tonnes/year)	:	600.000
Maximum daily site tonnage	:	2 10E6 kg/day
MSafe (maximum allowable site tonnage)	:	2,3 10E6 kg/day
Remarks	:	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal

Frequency and duration of use

Continuous exposure	:	300 Emission days (days/year), Continuous release.

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

Emission or Release Factor: Air	:	0,010 %
Emission or Release Factor: Water	:	0,001 %

Emission or Release Factor: Soil	:	0,010 %
Remarks	:	Emission or Release Factor Water is < 0,001%. All release factors refer to initial release prior to RMM. Release to water is release to wastewater.

Technical conditions and measures / Organizational measures;

Air	:	Treat air emission to provide a typical removal efficiency of: 90,0 %
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%): 87,3 %
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0 %
Remarks	:	Common practices vary across sites thus conservative process release estimates used. Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment plant

Flow rate of sewage treatment plant effluent	:	10.000 m3/d
Effectiveness (STP)	:	89,0 %
Total removal from wastewater according to internal and external location measures	:	89,0 %
Sludge Treatment	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	During manufacturing no waste of the substance is generated to treat.

Conditions and measures related to external recovery of waste

Recovery Methods	:	During manufacturing no waste of the substance is generated to recover.

2.2 Contributing scenario controlling worker exposure for:

PROC1 : Use in closed process, no likelihood of exposure

PROC2 : Use in closed, continuous process with occasional controlled exposure

PROC3 : Use in closed batch process (synthesis or formulation)

PROC8a : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC15 : Use as laboratory reagent

Product characteristics

Concentration of the Substance in Mixture/Article		Covers percentage substance in the product up to 100 % (unless stated differently)
Physical Form (at time of use)	:	Liquid
Vapour pressure	:	Vapour Pressure is given at STP. < 5 hPa
Remarks	:	Operation is carried out at elevated temperature (> 20°C above ambient temperature), Assumes a good basic standard of occupational hygiene is implemented, Human factors not influenced by risk management:, not applicable

Amount used

not applicable	:	

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Technical conditions and measures

G18 General Measures (carcinogens).
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.
CS15 General exposures (closed systems).
Handle substance within a closed system.
CS2 Process sampling + OC9 Outdoor
Sample via a closed loop or other system to avoid exposure.
CS85 Bulk Product Storage
Store substance within a closed system
CS36 Laboratory activities
Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
CS510 Marine vessel/barge (un)loading
Transfer via enclosed lines Clear transfer lines prior to de-coupling Retain drain downs in sealed storage pending disposal or for subsequent recycle.
CS511 Road tanker/rail car loading
Ensure material transfers are under containment or extract ventilation
CS39 Equipment cleaning and maintenance.
Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down and flush system prior to equipment break-in or maintenance

Organisational measures to prevent /limit releases, dispersion and exposure:

G18 General Measures (carcinogens).
Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
CS2 Process sampling + OC9 Outdoor
Avoid carrying out activities involving exposure for more than 15 minutes
CS85 Bulk Product Storage
Avoid carrying out activities involving exposure for more than 4 hours
CS510 Marine vessel/barge (un)loading
Avoid carrying out activities involving exposure for more than 4 hours

Conditions and measures related to personal protection, hygiene and health evaluation

G18 General Measures (carcinogens).
Where there is potential for exposure: Wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
CS15 General exposures (closed systems).
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS2 Process sampling + OC9 Outdoor
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS85 Bulk Product Storage
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS36 Laboratory activities
Wear suitable gloves tested to EN374.
CS510 Marine vessel/barge (un)loading
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS511 Road tanker/rail car loading
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS39 Equipment cleaning and maintenance.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

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.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2. Environment:
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – “Site-Specific Production” worksheet. For refinery sites where scaling revealed a condition of unsafe use (i.e., RCRs > 1), a site-specific chemical safety assessment was required. Consequently a Tier 2 assessment was performed in an attempt to refine conservative exposure assumptions and improve risk estimates. The Tier 2 analysis demonstrates that four refineries have RCRs > 1 (see PETRORISK file in IUCLID section 13 - "Site-Specific Product HFO T2" worksheet and the Appendix PETRORISK Higher Tier in IUCLID section 13). Effluent analysis has been performed for these four refineries taking into account the results of the 2013 Concawe Effluent Speciation Project and the site-specific volumes produced as reported in the Volume & Use Inventory that covers 2013 data. The results of the Tier 3 analyses are presented in the PETRORISK file in IUCLID section 13 - "Site-Specific Product HFO T3" worksheet and in the Appendix PETRORISK Higher Tier in IUCLID section 13. Applying these site-specific correction demonstrates that these refinery emissions do not lead to any exceedances of the RCR > 1 criterion.

1. Brief title of the Exposure Scenario: 01a - Distribution of substance

Main User Groups	:	**SU3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles **ERC5:** Industrial use resulting in inclusion into or onto a matrix **ERC6a:** Industrial use resulting in manufacture of another substance (use of intermediates) **ERC6b:** Industrial use of reactive processing aids **ERC6c:** Industrial use of monomers for manufacture of thermoplastics **ERC6d:** Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers **ERC7:** Industrial use of substances in closed systems
Further information	:	Specific Environmental Release Category ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	:	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for:

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Amount used

Remarks	:	Substance is complex UVCB. Predominantly hydrophobic.
Regional use tonnage	:	22 10E6 t/y
Fraction of EU tonnage used in region:	:	0,1
Fraction of Regional tonnage used locally:	:	1
Annual site tonnage (tonnes/year)	:	45.000
Maximum daily site tonnage (kg/day):	:	150.000
MSafe (maximum allowable site tonnage)	:	530.000 kg/day
Remarks	:	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal

Frequency and duration of use

Continuous exposure	:	300 Emission days (days/year), Continuous release.

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

Emission or Release Factor: Air	:	0,001 %

Emission or Release Factor: Water	:	0,001 %
Emission or Release Factor: Soil	:	0,001 %
Remarks	:	Emission or Release Factor Water is < 0,001%. Emission or Release Factor Air is < 0,001%. All release factors refer to initial release prior to RMM. Release to water is release to wastewater.

Technical conditions and measures / Organizational measures;

Air	:	Treat air emission to provide a typical removal efficiency of: 90,0 %
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%): 61,2 %
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0 %
Remarks	:	Common practices vary across sites thus conservative process release estimates used. Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Domestic treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (STP)	:	89,0 %
Total removal from wastewater according to internal and external location measures	:	89,0 %
Sludge Treatment	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

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

2.2 Contributing scenario controlling worker exposure for:

PROC1 : Use in closed process, no likelihood of exposure

PROC2 : Use in closed, continuous process with occasional controlled exposure

PROC3 : Use in closed batch process (synthesis or formulation)

PROC8a : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC15 : Use as laboratory reagent

Product characteristics

Concentration of the Substance in Mixture/Article		Covers percentage substance in the product up to 100 % (unless stated differently)
Physical Form (at time of use)	:	Liquid
Vapour pressure	:	Vapour Pressure is given at STP. < 5 hPa
Remarks	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented

Amount used

Not applicable	:	

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Technical conditions and measures

G18 General Measures (carcinogens).
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.
CS15 General exposures (closed systems).
Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.
CS2 Process sampling + OC9 Outdoor
Sample via a closed loop or other system to avoid exposure.
CS85 Bulk Product Storage
Store substance within a closed system
CS137 Product sampling
Sample via a closed loop or other system to avoid exposure.
CS36 Laboratory activities
Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
CS510 Marine vessel/barge (un)loading
Transfer via enclosed lines Clear transfer lines prior to de-coupling Retain drain downs in sealed storage pending disposal or for subsequent recycle.
CS511 Road tanker/rail car loading
Ensure material transfers are under containment or extract ventilation
CS39 Equipment cleaning and maintenance.
Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down and flush system prior to equipment break-in or maintenance

Organisational measures to prevent /limit releases, dispersion and exposure:

G18 General Measures (carcinogens).
Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
CS15 General exposures (closed systems).
Avoid carrying out activities involving exposure for more than 4 hours
CS2 Process sampling + OC9 Outdoor
Avoid carrying out activities involving exposure for more than 15 minutes
CS85 Bulk Product Storage
Avoid carrying out activities involving exposure for more than 4 hours
CS137 Product sampling
Avoid carrying out activities involving exposure for more than 15 minutes
CS510 Marine vessel/barge (un)loading
Avoid carrying out activities involving exposure for more than 4 hours

Conditions and measures related to personal protection, hygiene and health evaluation

G18 General Measures (carcinogens).
Where there is potential for exposure: Wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
CS15 General exposures (closed systems).
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS2 Process sampling + OC9 Outdoor
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS85 Bulk Product Storage
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS137 Product sampling
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS36 Laboratory activities
Wear suitable gloves tested to EN374.
CS510 Marine vessel/barge (un)loading
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS511 Road tanker/rail car loading
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS39 Equipment cleaning and maintenance.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

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.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2. Environment:
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

1. Brief title of the Exposure Scenario: 12a - Use as a fuel: Industrial

Main User Groups	:	**SU3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities **PROC16:** Using material as fuel sources, limited exposure to unburned product to be expected
Environmental release category	:	**ERC7:** Industrial use of substances in closed systems
Further information	:	Specific Environmental Release Category ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	:	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems

Amount used

Remarks	:	Substance is complex UVCB. Predominantly hydrophobic.
Regional use tonnage	:	7,6 10E6 t/y
Fraction of EU tonnage used in region:	:	0,1
Fraction of Regional tonnage used locally:	:	1
Annual site tonnage	:	1,5 10E6 t/y
Maximum daily site tonnage	:	5 10E6 kg/day
MSafe (maximum allowable site tonnage)	:	5,2 10E6 kg/day
Remarks	:	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal

Frequency and duration of use

Continuous exposure	:	300 Emission days (days/year), Continuous release.

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

Emission or Release Factor: Air	:	0,050 %
Emission or Release Factor: Water	:	0,001 %
Emission or Release Factor: Soil	:	0 %
Remarks	:	All release factors refer to initial release prior to RMM. Release to water is release to wastewater.

Technical conditions and measures / Organizational measures;

Air	:	Treat air emission to provide a typical removal efficiency of: 95,0 %

Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%): 88,6 %
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0 %
Remarks	:	Common practices vary across sites thus conservative process release estimates used. Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Domestic treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (STP)	:	89,0 %
Total removal from wastewater according to internal and external location measures	:	89,0 %
Sludge Treatment	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Combustion emissions limited by required exhaust emission controls., Combustion emissions considered in regional exposure assessment., External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	This substance is consumed during use and no waste of the substance is generated to recover.

2.2 Contributing scenario controlling worker exposure for:

PROC1 : Use in closed process, no likelihood of exposure

PROC2 : Use in closed, continuous process with occasional controlled exposure

PROC3 : Use in closed batch process (synthesis or formulation)

PROC8a : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC16 : Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics

Concentration of the Substance in Mixture/Article		Covers percentage substance in the product up to 100 % (unless stated differently)
Physical Form (at time of use)	:	Liquid
Vapour pressure	:	Vapour Pressure is given at STP. < 5 hPa
Remarks	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Technical conditions and measures

G18 General Measures (carcinogens).
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
CS15 General exposures (closed systems).
Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.
CS15 General exposures (closed systems).
CS137 Product sampling
Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
CS502 Bulk closed unloading
OC9 Outdoor
Transfer via enclosed lines
CS8 Drum/batch transfers
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Ensure material transfers are under containment or extract ventilation
CS117 Operation of solids filtering equipment
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
CS85 Bulk Product Storage
Store substance within a closed system Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
CS39 Equipment cleaning and maintenance.
Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down and flush system prior to equipment break-in or maintenance

Organisational measures to prevent /limit releases, dispersion and exposure:

G18 General Measures (carcinogens).
Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
CS15 General exposures (closed systems).
Avoid carrying out activities involving exposure for more than 4 hours
CS15 General exposures (closed systems).
CS137 Product sampling
Avoid carrying out activities involving exposure for more than 1 hour
CS502 Bulk closed unloading
OC9 Outdoor
Avoid carrying out activities involving exposure for more than 4 hours
CS8 Drum/batch transfers
Avoid carrying out activities involving exposure for more than 1 hour
CS117 Operation of solids filtering equipment
Avoid carrying out activities involving exposure for more than 4 hours
CS85 Bulk Product Storage
Avoid carrying out activities involving exposure for more than 4 hours

Conditions and measures related to personal protection, hygiene and health evaluation

G18 General Measures (carcinogens).
Where there is potential for exposure: Wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
CS15 General exposures (closed systems).
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS15 General exposures (closed systems).
CS137 Product sampling
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS502 Bulk closed unloading
OC9 Outdoor
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS8 Drum/batch transfers
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS117 Operation of solids filtering equipment
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS85 Bulk Product Storage
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
GEST_12l Use as a fuel, CS107 (closed systems)
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
CS39 Equipment cleaning and maintenance.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

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.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2. Environment:
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

1. Brief title of the Exposure Scenario: 12b - Use as a fuel: Professional

Main User Groups	:	**SU22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities **PROC16:** Using material as fuel sources, limited exposure to unburned product to be expected
Environmental release category	:	**ERC9a:** Wide dispersive indoor use of substances in closed systems **ERC9b:** Wide dispersive outdoor use of substances in closed systems
Further information	:	Specific Environmental Release Category ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	:	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for:

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

Amount used

Remarks	:	Substance is complex UVCB. Predominantly hydrophobic.
Regional use tonnage (tonnes/year)	:	2,6 10E6 t/y
Fraction of EU tonnage used in region:	:	0,1
Fraction of Regional tonnage used locally:	:	1
Annual site tonnage (tonnes/year)	:	1.300
Maximum daily site tonnage (kg/day):	:	3.500 kg/day
MSafe (maximum allowable site tonnage)	:	11.000 kg/day
Remarks	:	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal

Frequency and duration of use

Continuous exposure	:	365 Emission days (days/year), Continuous release.

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

Emission or Release Factor: Air	:	0,010 %
Emission or Release Factor: Water	:	0,001 %
Emission or Release Factor: Soil	:	0,001 %
Remarks	:	All release factors refer to release from wide dispersive use. Release factors for air and soil refer to regional use only.

Technical conditions and measures / Organizational measures;

Air	:	Treat air emission to provide a typical removal efficiency of : not applicable:
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%): 66,1 %
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%): 0 %
Remarks	:	Common practices vary across sites thus conservative process release estimates used. Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Domestic treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (STP)	:	89,0 %
Total removal from wastewater according to internal and external location measures	:	89,0 %
Sludge Treatment	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Combustion emissions limited by required exhaust emission controls., Combustion emissions considered in regional exposure assessment., External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	This substance is consumed during use and no waste of the substance is generated to recover.

2.2 Contributing scenario controlling worker exposure for:

PROC1 : Use in closed process, no likelihood of exposure

PROC2 : Use in closed, continuous process with occasional controlled exposure

PROC3 : Use in closed batch process (synthesis or formulation)

PROC8a : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b : Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC16 : Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics

Concentration of the Substance in Mixture/Article		Covers percentage substance in the product up to 100 % (unless stated differently)
Physical Form (at time of use)	:	Liquid
Vapour pressure	:	Vapour Pressure is given at STP. < 5 hPa
Remarks	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Technical conditions and measures

G18 General Measures (carcinogens).
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.
CS15 General exposures (closed systems).
CS137 Product sampling
Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
CS15 General exposures (closed systems).
Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
CS502 Bulk closed unloading
Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Ensure material transfers are under containment or extract ventilation
CS8 Drum/batch transfers
Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Ensure material transfers are under containment or extract ventilation
CS507 Refuelling
Ensure material transfers are under containment or extract ventilation
CS39 Equipment cleaning and maintenance.
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. Drain down system prior to equipment break-in or maintenance.

Organisational measures to prevent /limit releases, dispersion and exposure:

G18 General Measures (carcinogens).
Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
CS15 General exposures (closed systems).
CS137 Product sampling
Avoid carrying out activities involving exposure for more than 1 hour
CS15 General exposures (closed systems).
Avoid carrying out activities involving exposure for more than 1 hour
CS502 Bulk closed unloading
Avoid carrying out activities involving exposure for more than 1 hour
CS8 Drum/batch transfers
Avoid carrying out activities involving exposure for more than 1 hour
CS507 Refuelling
Avoid carrying out activities involving exposure for more than 1 hour

Conditions and measures related to personal protection, hygiene and health evaluation

G18 General Measures (carcinogens).
Where there is potential for exposure: Wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
CS15 General exposures (closed systems).
CS137 Product sampling
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
CS15 General exposures (closed systems).
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS502 Bulk closed unloading
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS8 Drum/batch transfers
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS507 Refuelling
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
GEST_12I Use as a fuel, CS107 (closed systems)
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
CS39 Equipment cleaning and maintenance.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

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.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2. Environment:
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).