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

1.1. Product identifier

Product form : Mixture

Trade name/designation : JET A 1

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

1.2.1. Relevant identified uses

Intended for general public

Main use category : Industrial use,Professional uses,Consumer use

Use of the substance/mixture : Further information: see exposure scenarios attached to this safety data sheet.

Title	Use descriptors
Distribution of substance (ES Ref.: 01a)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1
Use as an intermediate (ES Ref.: 01b)	SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC6a, ESVOC SPERC 6.1a.v1
Industrial use in cleaning agents : Not applicable EC 265-198-5) (ES Ref.: 04a)	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13, ERC4, ESVOC SPERC 4.4a.v1
Use as a fuel in industrial settings (ES Ref.: 12a)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, ERC7, ESVOC SPERC 7.12a.v1
Use as a fuel in professional settings (ES Ref.: 12b)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, ERC9a, ERC9b, ESVOC SPERC 9.12b.v1
Use as a fuel (ES Ref.: 12c)	PC13, ERC9a, ERC9b, ESVOC SPERC 9.12c.v1
Manufacture of substance (ES Ref.: 01)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1, ESVOC SPERC 1.1.v1
Formulation & (re)packing of substances and mixtures (ES Ref.: 02)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, ERC2, ESVOC SPERC 2.2.v1

Full text of use descriptors: see section 16

1.2.2. Uses advised against

Title	Use descriptors	Reason
Uses in coatings: Professional uses	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19, ERC8a, ERC8d	General protective and hygienic measures
Uses in coatings: Consumer uses	PC1, PC4, PC5, PC9a, PC9b, PC9c, PC10, PC15, PC18, PC23, PC23, PC24, PC24, PC31, PC34, PC34, ERC8a, ERC8d	General protective and hygienic measures
Use in cleaning agents: Professional uses	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13, ERC8a, ERC8d	General protective and hygienic measures
Use in cleaning agents: Consumer uses	PC0, PC3, PC4, PC8, PC9a, PC24, PC35, PC38, ERC8a, ERC8d	General protective and hygienic measures

Title	Use descriptors	Reason
Lubricants: Professional uses (Low environmental release)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20, ERC9a, ERC9b	General protective and hygienic measures
Lubricants: Professional uses (High environmental release)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20, ERC8a, ERC8d	General protective and hygienic measures
Lubricants: Consumer uses (Low environmental release)	PC1, PC24, PC31, ERC9a, ERC9b	General protective and hygienic measures
Lubricants: Consumer uses (High environmental release)	PC1, PC24, PC31, ERC8a, ERC8d	General protective and hygienic measures
Metal working fluids / rolling oils: Professional uses	PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, ERC8a, ERC8d	General protective and hygienic measures
Use as binders and release agents: Professional uses	PROC1, PROC2, PROC3, PROC4, PROC6, PROC8a, PROC8b, PROC10, PROC11, PROC14, ERC8a, ERC8d	General protective and hygienic measures
Use in agrochemicals: Professional uses	PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC11, PROC13, ERC8a, ERC8d	General protective and hygienic measures
Use in agrochemicals: Consumer uses	PC12, PC27, ERC8a, ERC8d	General protective and hygienic measures
Road and construction applications: Professional uses	PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, ERC8d, ERC8f	General protective and hygienic measures
Explosives manufacture & use: Professional uses	PROC1, PROC3, PROC5, PROC8a, PROC8b, ERC8e	General protective and hygienic measures

Full text of use descriptors: see section 16

1.3. Details of the supplier of the safety data sheet

Supplier
NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad
Serbia
T + 381 (0) 21 481 1111
REACHNIS@nis.rs

Only Representative
BENS Consulting d.o.o.
Špruha 19
1236 Trzin
Slovenija
T +386 41 979 800
info@bens-consulting.eu

1.4. Emergency telephone number

Emergency number : + 381 (0) 21 481 1111
Only available during office hours.

Country/Area	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flammable liquids, Category 3	H226
Skin corrosion/irritation, Category 2	H315
Specific target organ toxicity – Single exposure, Category 3, Narcosis	H336
Aspiration hazard, Category 1	H304
Hazardous to the aquatic environment – Chronic Hazard, Category 2	H411

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS07 GHS08 GHS09

Signal word : Danger

Contains : Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).]; Kerosine (petroleum)

Hazard statements (CLP) : H226 - Flammable liquid and vapour.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H336 - May cause drowsiness or dizziness.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements (CLP) : P101 - If medical advice is needed, have product container or label at hand.
P102 - Keep out of reach of children.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P271 - Use only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P301+P310+P331 - IF SWALLOWED: Immediately call a POISON CENTER, a doctor. Do NOT induce vomiting.
P391 - Collect spillage.
P403+P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 - Dispose of contents and container to an approved waste disposal plant.

Child-resistant fastening : Applicable

Tactile warning : Applicable

2.3. Other hazards

Other hazards : Vapours can form explosive mixtures with air. Results of PBT and vPvB assessment : Not applicable. Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).]	CAS-No.: 64742-81-0 EC-No.: 265-184-9 EC Index: 649-423-00-8 REACH-no: 01-2119462828-25-0109	≤ 100	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Kerosine (petroleum)	CAS-No.: 8008-20-6 EC-No.: 232-366-4 EC Index: 649-404-00-4 REACH-no: 01-2119485517-27-0133	≤ 100	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 STOT SE 3, H336

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Additional advice : First aider: Pay attention to self-protection!. Concerning personal protective equipment to use, see section 8. Never give anything by mouth to an unconscious person. In case of doubt or persistent symptoms, consult always a physician. Show this safety data sheet to the doctor in attendance.

Inhalation	:	Remove casualty to fresh air and keep warm and at rest. Give oxygen or artificial respiration if necessary. In case of doubt or persistent symptoms, consult always a physician.
Skin contact	:	Remove contaminated clothing and shoes. Gently wash with plenty of soap and water. In case of doubt or persistent symptoms, consult always a physician.
Eyes contact	:	Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. In case of doubt or persistent symptoms, consult always a physician.
Ingestion	:	Rinse mouth thoroughly with water. Do NOT induce vomiting. Get immediate medical advice/attention.

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

Inhalation	:	May cause drowsiness or dizziness. In high concentrations : Headache, Nausea, Vomiting.
Skin contact	:	Causes skin irritation. The following symptoms may occur: erythema (redness).
Eyes contact	:	Contact with eyes may cause irritation. The following symptoms may occur: erythema (redness).
Ingestion	:	May be fatal if swallowed and enters airways. The following symptoms may occur: Nausea, Diarrhoea, Unconsciousness.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	carbon dioxide (CO2), powder, alcohol-resistant foam, water spray.
Unsuitable extinguishing media	:	Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards	:	Flammable liquid and vapour. Heating will cause a rise in pressure with a risk of bursting.
Explosion hazard	:	Can form explosive mixtures with air. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours.
Hazardous decomposition products in case of fire	:	Carbon oxides (CO, CO2). Organic compounds. inorganic compounds. Hydrogen sulfide. Sulphur oxides. sulphuric acid.

5.3. Advice for firefighters

Firefighting instructions	:	Evacuate area. Use water spray or fog for cooling exposed containers. Contain the extinguishing fluids by bunding. Prevent fire fighting water from entering the environment.
Protection during firefighting	:	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus.
Other information	:	Do not allow run-off from fire-fighting to enter drains or water courses. Dispose of waste in accordance with environmental legislation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

For non-emergency personnel : Evacuate unnecessary personnel. Keep upwind. Provide adequate ventilation. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Wear recommended personal protective equipment. Concerning personal protective equipment to use, see section 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed. Use explosion-proof equipment. Use only non-sparking tools. Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

6.1.2. For emergency responders

For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Dam up the liquid spill. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Recover large spills by pumping (use an explosion proof or hand pump). Place in a suitable container for disposal in accordance with the waste regulations (see Section 13). This material and its container must be disposed of in a safe way, and as per local legislation. Cover the spilled liquid product with foam to slow down evaporation.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Vapours may form explosive mixture with air.

Precautions for safe handling	:	Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Take any precaution to avoid mixing with Incompatible materials, Refer to Section 10 on Incompatible Materials. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Avoid release to the environment. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools. Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.
Hygiene measures	:	Keep good industrial hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feedingstuffs. Remove contaminated clothes. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Keep out of reach of children.
Storage conditions	:	Keep container tightly closed. Store in a dry, cool and well-ventilated place. Do not store near or with any of the incompatible materials listed in section 10. Bund storage facilities to prevent soil and water pollution in the event of spillage. Take precautionary measures against static discharge.
Incompatible materials	:	Oxidising substances.
Heat and ignition sources	:	Keep away from open flames, hot surfaces and sources of ignition. Do not smoke. Keep out of direct sunlight.
Special rules on packaging	:	Tactile warning (EN/ISO 11683). Child-resistant fastening. Containers which are opened should be properly resealed and kept upright to prevent leakage. Keep in properly labelled containers.
Packaging materials	:	Keep only in the original container. Suitable material: Mild steel, Stainless steel. Unsuitable material: Synthetic material.

Germany

German storage class (LGK)	:	LGK 3 - Flammable liquids

Switzerland

Storage class (LK)	:	LK 3 - Flammable liquids

7.3. Specific end use(s)

Further information: see exposure scenarios attached to this safety data sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] (64742-81-0)	
Portugal - Occupational Exposure Limits	
OEL TWA	200 ppm (restricted to conditions in which there are negligible aerosol exposures)
OEL chemical category	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans, skin - potential for cutaneous exposure
USA - ACGIH - Occupational Exposure Limits	
ACGIH® TLV® TWA	200 mg/m³ (application restricted to conditions in which there are negligible aerosol exposures-total Hydrocarbon vapor (Kerosene/Jet fuels)
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans, Skin - potential significant contribution to overall exposure by the cutaneous route

Kerosine (petroleum) (8008-20-6)	
Belgium - Occupational Exposure Limits	
Local name	Kérosène (en vapeur d'hydrocarbure total): application limitée aux conditions d'exposition aux aérosols négligeable # Kerosine (als totale koolwaterstofdamp): toepassing beperkt tot omstandigheden met verwaarloosbare blootstelling aan aërosolen
OEL TWA	200 mg/m³ (application limited to exposure conditions to negligible aerosols-total hydrocarbon vapor)
Remark	D: la mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # D: de vermelding "D" betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
OEL chemical category	Skin
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
OEL TWA	300 mg/m³
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Kerosin (Erdöl) (C9 – C14 Aliphaten)
Occupational exposure limit value (mg/m³) (TRGS900)	Siehe TRGS 900, Nummer 2.9

Kerosine (petroleum) (8008-20-6)	
Remark	AGS - Ausschuss für Gefahrstoffe; Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
Ireland - Occupational Exposure Limits	
OEL chemical category	Potential for cutaneous absorption
Poland - Occupational Exposure Limits	
Local name	Nafta
NDS (OEL TWA)	100 mg/m³
NDSCh (OEL STEL)	300 mg/m³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Queroseno / “Jet fuels”, expresso em hidrocarbonetos totais na forma de vapor
OEL TWA	200 mg/m³ P (Aplicação restrita às condições nas quais são negligenciáveis as exposições a aerossóis)
	200 ppm (restricted to conditions in which there are negligible aerosol exposures)
OEL chemical category	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans, skin - potential for cutaneous exposure
Remark	P (Toxicidade percutânea); A3 (Agente carcinogénico confirmado nos animais de laboratorio con relevância desconhecida no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Spain - Occupational Exposure Limits	
Local name	Queroseno (combustible de aviación)
VLA-ED (OEL TWA)	200 mg/m³ (aviation fuel)
Remark	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante).
OEL chemical category	skin - potential for cutaneous absorption
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA)	350 mg/m³ (vapour) 5 mg/m³ (aerosol, inhalable dust)
	50 ppm (vapour)
KZGW (OEL STEL)	20 mg/m³ (aerosol, inhalable dust) 700 mg/m³ (vapour)
	100 ppm (vapour)

Kerosine (petroleum) (8008-20-6)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Kerosene, as total hydrocarbon vapor
ACGIH® TLV® TWA	200 mg/m³ (application restricted to conditions in which there are negligible aerosol exposures-total Hydrocarbon vapor (Kerosene/Jet fuels)
Remark (ACGIH)	TLV® Basis: Skin & URT irr; CNS impair. Notations: Skin; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans, Skin - potential significant contribution to overall exposure by the cutaneous route
Regulatory reference	ACGIH 2024

8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods	Personal air monitoring. Room air monitoring.

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Additional information : Personal air monitoring. Room air monitoring. Recommended monitoring procedures

8.1.5. Control banding

No additional information available

8.2. Exposure controls

Engineering measure(s) : Provide adequate ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Organisational measures to prevent/limit releases, dispersion and exposure. See Section 7 for information on safe handling . Use only outdoors or in a well-ventilated area. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.

Personal protective equipment : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hand protection	:	Wear chemically resistant gloves (tested to EN374) . Suitable material: Polyvinylalcohol (PVA). Breakthrough time : 8h. Thickness > 0.3 mm. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Eye protection	:	Use suitable eye protection (EN166): goggles. Use splash goggles when eye contact due to splashing is possible
Body protection	:	Wear suitable protective clothing
Respiratory protection	:	In case of insufficient ventilation, wear suitable respiratory equipment. Half-face mask (DIN EN 140). full face mask (DIN EN 136). Filter type: A (EN 14387). The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used. (EN 137)
Thermal hazard protection	:	Not required for normal conditions of use. Use dedicated equipment.
Environmental exposure controls	:	Avoid release to the environment. Comply with applicable Community environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Colour	:	Colourless.
Appearance	:	liquid.
Odour	:	petroleum hydrocarbon odour.
Odour threshold	:	No data available
Melting / freezing point	:	-47 °C
Freezing point	:	Not available
Initial boiling point and boiling range	:	130 – 300 °C
Flammability	:	Flammable liquid and vapour.
Explosive properties	:	Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	:	Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.
Lower explosion limit	:	0,7 vol %
Upper explosion limit	:	7,7 vol %
Flash point	:	≥ 38 °C (closed cup)
Auto-ignition temperature	:	228,85 °C
Decomposition temperature	:	No data available
pH	:	Not applicable
Kinematic viscosity	:	< 8 mm^2/s
Solubility	:	Water: Not applicable (UVCB)
Partition coefficient n-octanol/water (Log Kow)	:	Not applicable (UVCB)
Vapour pressure	:	< 1 kPa (20°C)
Vapour pressure at 50°C	:	Not available

Density	:	0,775 – 0,84 g/ml (15°C)
Relative density	:	0,8
Vapour density	:	4,5 kg/m³
Particle characteristics	:	Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Relative evaporation rate (butylacetate=1) : 0,212138

SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapour. Reference to other sections 10.4 & 10.5.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air. No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid the build-up of electrostatic charge. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Flammable vapours can accumulate in head space of closed systems. Protect from sunlight. See Section 7 for information on safe handling.

10.5. Incompatible materials

oxidising substances. See Section 7 for information on safe handling.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO2). Organic compounds. Inorganic compound. Hydrogen sulfide. Sulphur oxides. Sulphuric acid. Reference to other sections 5.2.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral)	:	Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	:	Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	:	Not classified (Based on available data, the classification criteria are not met)

Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] (64742-81-0)	
LD50/oral/rat	> 5000 mg/kg (Source: EPA_HPV)
LD50/dermal/rabbit	> 2000 mg/kg (Source: CHEMVIEW)
LC50/inhalation/4h/rat	> 5200 mg/m³ (Exposure time: 4 h Source: EPA_HPV)

Kerosine (petroleum) (8008-20-6)	
LD50/oral/rat	> 5000 mg/kg (Source: CHEMVIEW)
LD50/dermal/rabbit	> 2000 mg/kg (Source: CHEMVIEW)
LC50/inhalation/4h/rat	> 5,28 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.
pH: Not applicable

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: Not applicable

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

STOT-single exposure : May cause drowsiness or dizziness.

Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] (64742-81-0)	
STOT-single exposure	May cause drowsiness or dizziness.

Kerosine (petroleum) (8008-20-6)	
STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

Aspiration hazard : May be fatal if swallowed and enters airways.

JET A 1	
Kinematic viscosity	< 8 mm²/s

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

11.2.2. Other information

Other information : Symptoms related to the physical, chemical and toxicological characteristics,For further information see section 4

SECTION 12: Ecological information

12.1. Toxicity

Environmental properties : Toxic to aquatic life with long lasting effects.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Toxic to aquatic life with long lasting effects.

Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] (64742-81-0)	
LC50 - Fish [1]	45 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through] Source: IUCLID)
LC50 - Fish [2]	1740 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static] Source: IUCLID)
EC50 - Crustacea [1]	4720 mg/l (Exposure time: 48 h - Species: Den-dronereides heteropoda)

12.2. Persistence and degradability

JET A 1	
Persistence and degradability	Substance is complex UVCB.

12.3. Bioaccumulative potential

JET A 1	
Partition coefficient n-octanol/water (Log Kow)	Not applicable (UVCB)

Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] (64742-81-0)	
BCF - Fish [1]	61 – 159
Partition coefficient n-octanol/water	3,3 - 6

Kerosine (petroleum) (8008-20-6)	
Partition coefficient n-octanol/water	3,3 - 6

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

JET A 1	
Results of PBT assessment	Not applicable

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.

12.7. Other adverse effects

Other adverse effects : No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

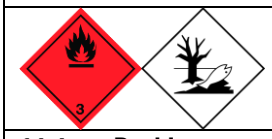
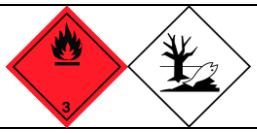
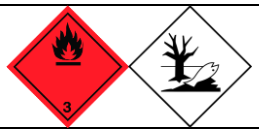
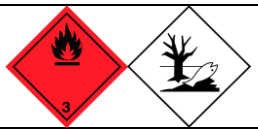
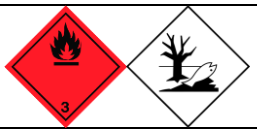
Product/Packaging disposal recommendations : Avoid release to the environment. Dispose of empty containers and wastes safely. See Section 7 for information on safe handling. Refer to manufacturer/supplier for information on recovery/recycling. Recycling is preferred to disposal or incineration. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations. Handle contaminated packages in the same way as the substance itself. Dispose of contaminated materials in accordance with current regulations. Do not pierce or burn, even after use. Never use pressure to empty container.

European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC) : This material and its container must be disposed of as hazardous waste Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
1863	1863	1863	1863	1863
14.2. UN proper shipping name				
FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE	Fuel, aviation, turbine engine	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE
Transport document description				
UN 1863 FUEL, AVIATION, TURBINE ENGINE, 3, III, (D/E), ENVIRONMENTALLY	UN 1863 FUEL, AVIATION, TURBINE ENGINE, 3, III, MARINE	UN 1863 Fuel, aviation, turbine engine, 3, III, ENVIRONMENTALLY	UN 1863 FUEL, AVIATION, TURBINE ENGINE, 3, III, ENVIRONMENTALLY	UN 1863 FUEL, AVIATION, TURBINE ENGINE, 3, III, ENVIRONMENTALLY

ADR	IMDG	IATA	ADN	RID
HAZARDOUS	POLLUTANT/ENVIRONMENTALLY HAZARDOUS	HAZARDOUS	HAZARDOUS	HAZARDOUS
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available				

14.6. Special precautions for user

Special precautions for user : No data available

- Overland transport

Classification code (ADR)	:	F1
Special provisions	:	664
Limited quantities (ADR)	:	5l
Excepted quantities (ADR)	:	E1
Packing instructions (ADR)	:	P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	:	MP19
Portable tank and bulk container instructions (ADR)	:	T2
Portable tank and bulk container special provisions (ADR)	:	TP1
Tank code (ADR)	:	LGBF
Vehicle for tank carriage	:	FL
Transport category (ADR)	:	3
Special provisions for carriage - Packages (ADR)	:	V12
Special provisions for carriage - Operation (ADR)	:	S2
Hazard identification number (Kemler No.)	:	30
Orange plates	:	30 1863
Tunnel restriction code	:	D/E
EAC code	:	3YE

- Transport by sea

Special provisions (IMDG)	: 223
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T2
Tank special provisions (IMDG)	: TP1
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-E
Stowage category (IMDG)	: A
Properties and observations (IMDG)	: Immiscible with water.

- Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y344
PCA limited quantity max net quantity (IATA)	: 10L
PCA packing instructions (IATA)	: 355
PCA max net quantity (IATA)	: 60L
CAO packing instructions (IATA)	: 366
CAO max net quantity (IATA)	: 220L
Special provisions (IATA)	: A3
ERG code (IATA)	: 3L

- Inland waterway transport

Classification code (ADN)	: F1
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 0

- Rail transport

Classification code (RID)	: F1
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T2
Portable tank and bulk container special provisions (RID)	: TP1
Tank codes for RID tanks (RID)	: LGBF
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Colis express (express parcels) (RID)	: CE4
Hazard identification number (RID)	: 30

14.7. Maritime transport in bulk according to IMO instruments

Code: IBC : This product is being carried under the scope of MARPOL Annex I.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
3(a)	JET A 1 ; Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] ; Kerosine (petroleum)	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
3(b)	JET A 1 ; Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] ; Kerosine (petroleum)	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	JET A 1 ; Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] ; Kerosine (petroleum)	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
40.	Kerosine (petroleum), hydrodesulfurized; Kerosine - unspecified;[A complex combination of hydrocarbons obtained from a petroleum stock by treating with hydrogen to convert organic sulfur to hydrogen sulfide which is removed. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of approximately 150 °C to 290 °C (302 °F to 554 °F).] ; Kerosine (petroleum)	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (2024/590)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

Explosives Precursors Regulation (EU 2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (EC 273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

Detergent Regulation (648/2004/EC): Labelling of contents

Labelling for contents according to regulation (EC) No. 648/2004 : Not applicable

15.1.2. National regulations

France

Installations classées			
No ICPE	Désignation de la rubrique	Code Régime	Rayon
4734.text	Produits pétroliers spécifiques et carburants de substitution : essences et naphtas ; kérosènes (carburants d'aviation compris) ; gazoles (gazole diesel, gazole de chauffage domestique et mélanges de gazoles compris) ; fioul lourd ; carburants de substitution pour véhicules, utilisés aux mêmes fins et aux mêmes usages et présentant des propriétés similaires en matière d'inflammabilité et de danger pour l'environnement. La quantité totale susceptible d'être présente dans les installations y compris dans les cavités souterraines étant :		
4734.1a	1. Pour les cavités souterraines et les stockages enterrés : a) Supérieure ou égale à 2 500 t Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	A	
4734.1b	1. Pour les cavités souterraines et les stockages enterrés : b) Supérieure ou égale à 1 000 t mais inférieure à 2 500 t Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	E	2
4734.1c	1. Pour les cavités souterraines et les stockages enterrés : c) Supérieure ou égale à 50 t d'essence ou 250 t au total, mais inférieure à 1 000 t au total Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	DC	2
4734.2a	2. Pour les autres stockages : a) Supérieure ou égale à 1 000 t Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	A	2
4734.2b	2. Pour les autres stockages : b) Supérieure ou égale à 100 t d'essence ou 500 t au total, mais inférieure à 1 000 t au total Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	E	2
4734.2c	2. Pour les autres stockages : c) Supérieure ou égale à 50 t au total, mais inférieure à 100 t d'essence et inférieure à 500 t au total Quantité seuil bas au sens de l'article R. 511-10 : 2 500 t. Quantité seuil haut au sens de l'article R. 511-10 : 25 000 t.	DC	2

Germany

Risk classification according to VbF : A II - Liquids with a flashpoint between 21°C and 55°C.

Water hazard class (WGK)	:	WGK 2, Significantly hazardous to water (Classification according to AwSV, Annex 1).
Major Accidents Ordinance (12. BImSchV)	:	Listed in the 12. BImSchV (Annex I) under: 2.3.2 - Quantity threshold for operational area under § 1 para. 1 - Sentence 1 :2500000 kg - Sentence 2 :25000000 kg
Technical Instructions on Air Quality Control (TA Luft)	:	5.2.6 Gaseous Emissions during the Processing, Conveying, Transfilling or Storage of Liquid Organic Substances.

Netherlands

Waterbezwaarlijkheid	:	A (2) - Vergiftig voor in water levende organismen kan in het aquatische milieu op lange termijn schadelijke effecten veroorzaken
SZW-lijst van kankerverwekkende stoffen	:	None of the components are listed
SZW-lijst van mutagene stoffen	:	None of the components are listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	:	None of the components are listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	:	None of the components are listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	:	None of the components are listed

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

1.3	Details of the supplier of the safety data sheet	Modified	
2.2	Precautionary statements (CLP)	Update	
7.2	Technical measures	Added	
16	Other information	Added	

Abbreviations and acronyms:

	ABM = Algemene beoordelingsmethodiek
	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code LEL = Lower Explosive Limit/Lower Explosion Limit UEL = Upper Explosion Limit/Upper Explosive Limit REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	BTT = Breakthrough time (maximum wearing time)
	DMEL = Derived Minimal Effect level
	DNEL = Derived No Effect Level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	EWC = European waste catalogue
	LC50 = Median lethal concentration
	LD50 = Median lethal dose
	LL50 = Median lethal level

	NA = Not applicable
	NOEC = No observed effect concentration
	NOEL: no-observed-effect level
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	N.O.S. = Not Otherwise Specified
	OEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	PNEC = Predicted No Effect Concentration
	Quantitative structure-activity relationship (QSAR)
	STOT = Specific Target Organ Toxicity
	TWA = time weighted average
	VOC = Volatile organic compounds
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)

Sources of key data used to compile the datasheet : CSR = Chemical Safety Report. CONCAWE. ECHA (European Chemicals Agency).

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Hazard classification and labeling of petroleum substances in the European Economic Area, Concawe – 2025 (http://www.concawe.eu).

Full text of H- and EUH-statements:

Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
Flam. Liq. 3	Flammable liquids, Category 3
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.

Full text of use descriptors

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ESVOC SPERC 1.1.v1	Manufacture of substance: Industrial (SU3)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)
ESVOC SPERC 4.4a.v1	Use in cleaning agents: Industrial (SU3)
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
ESVOC SPERC 9.12b.v1	Use as a fuel: Professional (SU22)
ESVOC SPERC 9.12c.v1	Use as a fuel: Consumer (SU21)
PC0	Other
PC1	Adhesives, sealants
PC10	Building and construction preparations not covered elsewhere
PC12	Fertilizers
PC13	Fuels
PC15	Non-metal-surface treatment products
PC18	Ink and Toners
PC23	Leather treatment products
PC24	Lubricants, greases, release products
PC27	Plant protection products
PC3	Air care products
PC31	Glansmiddelen en wasmengsels
PC34	Textile dyes, finishing and impregnating products; including bleaches and other processing aids
PC35	Washing and cleaning products (including solvent based products)
PC38	Welding and soldering products, flux products
PC4	Anti-Freeze and De-icing products
PC5	Artists Supply and Hobby preparations
PC8	Biocidal products
PC9a	Coatings and paints, thinners, paint removers
PC9b	Fillers, putties, plasters, modelling clay
PC9c	Finger paints
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

PROC16	Use of fuels
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC20	Use of functional fluids in small devices
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Annex to the safety data sheet

Annex : Identified uses						
Title	**Sector of use**	**Product category**	**Process category**	**Article category**	**Environmental release**	**SPERC**
Manufacture of substance			PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15		ERC1	ESVOC SPERC 1.1.v1
Distribution of substance			PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15		ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	ESVOC SPERC 1.1b.v1
Use as an intermediate	SU8, SU9		PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15		ERC6a	ESVOC SPERC 6.1a.v1
Formulation & (re)packing of substances and mixtures			PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15		ERC2	ESVOC SPERC 2.2.v1
Industrial use in cleaning agents : Not applicable EC 265-198-5)			PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13		ERC4	ESVOC SPERC 4.4a.v1
Use as a fuel in industrial settings			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		ERC7	ESVOC SPERC 7.12a.v1

Use as a fuel in professional settings			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		ERC9a, ERC9b	ESVOC SPERC 9.12b.v1
Use as a fuel		PC13			ERC9a, ERC9b	ESVOC SPERC 9.12c.v1

1. Exposure scenario 01

Manufacture of substance

ES Ref.: 01 ES Type: Worker Version: 2 (CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 ERC1 ESVOC SPERC 1.1.v1
Processes, tasks activities covered	Manufacture of substance or use as process chemical or extracting 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).
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Emission days (days/year):	300
Other given operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature),Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop	
General exposures (closed systems)	No other specific measures identified.	
General exposures (open systems)	No other specific measures identified.	
Bulk transfers	No other specific measures identified.	
Process sampling	No other specific measures identified.	
Laboratory activities	No other specific measures identified.	
Equipment cleaning and maintenance	No other specific measures identified.	
Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC1, ESVOC SPERC 1.1.v1)

ERC1	Manufacture of the substance
ESVOC SPERC 1.1.v1	Manufacture of substance: Industrial (SU3)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB.

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	1900000
	Fraction of regional tonnage used locally:	0,92
	Annual site tonnage (tons/year):	1800000
	Maximum daily site tonnage (kg/day)	5900000
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,05
	Release fraction to wastewater from process (initial release prior to RMM):	0,0003
	Release fraction to soil from process (initial release prior to RMM):	0,0001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment,Prevent discharge of undissolved substance to or recover from onsite wastewater,Onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	(EC 265-198-5: 86,2) 90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	98,2
	If discharging to domestic sewage treatment plant,	(EC 265-198-5: 0) 62,6

	provide the required onsite wastewater removal efficiency of ≥ (%):EC 265-198-5: Not applicable as there is no release to wastewater	
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	EC 265-198-5 = 290000
	Assumed domestic sewage treatment plant flow (m³/d):	10000
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/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 - "Site-Specific Production" worksheet,RCRair - Maximum Risk Characterization Ratios for air emissions : 0.16 (EC 265-198-5: 0,0032),RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.91(EC 265-198-5: 0,036)

1. Exposure scenario 01a

Distribution of substance

ES Ref.: 01a ES Type: Worker Version: 2 (ref CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOC SPERC 1.1b.v1
Processes, tasks activities covered	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities. Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop	
General exposures (closed systems)	No other specific measures identified.	
CS16 - General exposures (open systems)	No other specific measures identified.	

CS2 - Process sampling	No other specific measures identified.	
CS36 - Laboratory activities	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS6 - Drum and small package filling	No other specific measures identified.	
CS39 - Equipment cleaning and maintenance	No other specific measures identified.	
CS85 - Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1)

ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	2400000
	Fraction of regional tonnage used locally:	0,002
	Annual site tonnage (tons/year):	4800
	Maximum daily site tonnage (kg/day)	48000
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	
	Release fraction to wastewater from process (initial release prior to RMM):	
	Release fraction to soil from process (initial release prior to RMM):	

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by the freshwater,No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via	95,1

	domestic sewage treatment (%):	
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	EC 265-198-5 = 1800000 / EC 265-184-9 = 2400000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : 0.00032 / EC 265-198-5 = 0,0000059,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.02 / EC 265-198-5 = 0,0017

1. Exposure scenario 01b

Use as an intermediate

ES Ref.: 01b ES Type: Worker Version: 2 (ref CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 SU8, SU9 ERC6a ESVOC SPERC 6.1a.v1
Processes, tasks activities covered	Use as an intermediate within closed or contained systems (not related to Strictly Controlled Conditions). 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). Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature),Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop	
General exposures (closed systems)	No other specific measures identified.	

CS16 - General exposures (open systems)	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS2 - Process sampling	No other specific measures identified.	
CS36 - Laboratory activities	No other specific measures identified.	
CS39 - Equipment cleaning and maintenance	No other specific measures identified.	
CS85 - Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC6a, ESVOC SPERC 6.1a.v1)

ERC6a	Use of intermediate
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	270000
	Fraction of regional tonnage used locally:	0,055
	Annual site tonnage (tons/year):	15000
	Maximum daily site tonnage (kg/day)	50000
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	0,01 %
	Release fraction to wastewater from process (initial release prior to RMM):	0,0003 %
	Release fraction to soil from process (initial release prior to RMM):	0,001 %

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment,Prevent discharge of undissolved substance to or recover from onsite wastewater,If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	80
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on	EC 265-198-5 = 59000 / EC

	release following total wastewater treatment removal (kg/d):	265-184-9 = 79000
	Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : 0.00061 / EC 265-198-5 = 0,00067,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.63 / EC 265-198-5 = 0,85

1. Exposure scenario 02

Formulation & (re)packing of substances and mixtures

ES Ref.: 02 ES Type: Worker Version: 2 (CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15 ERC2 ESVOC SPERC 2.2.v1
Processes, tasks activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems	

	that may develop	
General exposures (closed systems)	No other specific measures identified.	
CS16 - General exposures (open systems)	No other specific measures identified.	
CS2 - Process sampling	No other specific measures identified.	
CS36 - Laboratory activities	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS30 - Mixing operations (open systems)	No other specific measures identified.	
CS34 - Manual,CS22 - Transfer from/pouring from containers	No other specific measures identified.	
CS8 - Drum/batch transfers	No other specific measures identified.	
CS100 - Production or preparation or articles by tabletting, compression, extrusion or pelletisation	No other specific measures identified.	
CS6 - Drum and small package filling	No other specific measures identified.	
CS39 - Equipment cleaning and maintenance	No other specific measures identified.	
CS85 - Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC2, ESVOC SPERC 2.2.v1)

ERC2	Formulation into mixture
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	2100000
	Fraction of regional tonnage used locally:	0,014
	Annual site tonnage (tons/year):	30000
	Maximum daily site tonnage (kg/day)	100000
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	
	Release fraction to wastewater from process (initial release prior to RMM):	
	Release fraction to soil from process (initial release prior to RMM):	

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment,Prevent discharge of undissolved substance to or recover from onsite wastewater,If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	0
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	EC 265-198-5 = 81,5% / EC 265-184-9 = 94,2
	If discharging to domestic sewage treatment plant,	0

	provide the required onsite wastewater removal efficiency of ≥ (%):	
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	EC 265-198-5 = 88000 / EC 265-184-9 = 120000
	Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : 0.013 / EC 265-198-5 = 0,0036 ,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.84 / EC 265-198-5 = 0,27

1. Exposure scenario 04a

Industrial use in cleaning agents

ES Ref.: 04a ES Type: Worker Version: 2 (CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13 ERC4 ESVOC SPERC 4.4a.v1
Comment	Industrial use : NA EC 265-198-5
Processes, tasks activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance. Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC10	Roller application or brushing
PROC13	Treatment of articles by dipping and pouring

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /	

	minimise exposures and to report any skin problems that may develop,Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.	
General exposures (closed systems)	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS93 - Automated process with (semi) closed systems,CS38 - Use in contained systems	No other specific measures identified.	
CS93 - Automated process with (semi) closed systems,CS38 - Use in contained systems,CS8 - Drum/batch transfers	No other specific measures identified.	
CS101 - Application of cleaning products in closed systems	No other specific measures identified.	
CS45 - Filling/ preparation of equipment from drums or containers,CS81 - Dedicated facility	No other specific measures identified.	
CS37 - Use in contained batch processes,CS76 - Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products)	No other specific measures identified.	
CS4 - Dipping, immersion and pouring	No other specific measures identified.	
CS42 - Cleaning with low-pressure washers	No other specific measures identified.	
CS44 - Cleaning with high pressure washers	No other specific measures identified.	
CS34 - Manual,CS47 - Cleaning,CS48 - Surfaces,CS60 - no spraying	No other specific measures identified.	
CS39 - Equipment cleaning and maintenance	No other specific measures identified.	
Storage,Product sampling	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC4, ESVOC SPERC 4.4a.v1)

ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ESVOC SPERC 4.4a.v1	Use in cleaning agents: Industrial (SU3)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	3,8
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	3,8
	Maximum daily site tonnage (kg/day)	190
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	20
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	1 %
	Release fraction to wastewater from process (initial release prior to RMM):	0,000003 %
	Release fraction to soil from process (initial release prior to RMM):	0 %

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by the freshwater,Prevent discharge of undissolved substance to or recover from onsite wastewater,No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	70
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	33000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : 0.00033,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.0056

1. Exposure scenario 12a

Use as a fuel in industrial settings

ES Ref.: 12a ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 ERC7 ESVOC SPERC 7.12a.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC16	Use of fuels

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop	
General exposures (closed systems)	No other specific measures identified.	
Use as a fuel,CS107 - (closed systems)	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS8 - Drum/batch transfers	No other specific measures identified.	
CS39 - Equipment cleaning and maintenance	No other specific measures identified.	

CS85 - Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC7, ESVOC SPERC 7.12a.v1)

ERC7	Use of functional fluid at industrial site
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	370000
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	370000
	Maximum daily site tonnage (kg/day)	1200000
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	EC 265-198-5 = 20 / EC 265-184-9 = 300
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from process (initial release prior to RMM):	
	Release fraction to wastewater from process (initial release prior to RMM):	
	Release fraction to soil from process (initial release prior to RMM):	0 %

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment,If discharging to domestic sewage treatment plant, no onsite wastewater treatment required,EC 265-198-5: No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	95
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	EC 265-198-5 = 0 / EC 265-184-9 = 90,7
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2400000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls,Combustion emissions considered in regional exposure assessment.	

Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : 0.017 / EC 265-198-5 = 0,0000059,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : 0.52 / EC 265-198-5 = 0,00028

1. Exposure scenario 12b

Use as a fuel in professional settings

ES Ref.: 12b ES Type: Worker Version: 2 (CONCAWE 2019)	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 ERC9a, ERC9b ESVOC SPERC 9.12b.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. Widespread use by professional workers (PW)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC16	Use of fuels

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Conditions and measures related to personal protection, hygiene and health evaluation	For further information refer to section 8: "Exposure controls/personal protection"	

Other risk management measures:

General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop	
General exposures (closed systems)	No other specific measures identified.	
Use as a fuel,CS107 - (closed systems)	No other specific measures identified.	
CS14 - Bulk transfers	No other specific measures identified.	
CS22 - Transfer from/pouring from containers	No other specific measures identified.	

CS39 - Equipment cleaning and maintenance	No other specific measures identified.	
CS85 - Bulk product storage	No other specific measures identified.	

2.2 Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.12b.v1)

ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ESVOC SPERC 9.12b.v1	Use as a fuel: Professional (SU22)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently)
Vapour pressure	Liquid, vapour pressure 0,5 - 10 kPa at STP
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	1700000
	Fraction of regional tonnage used locally:	0,0005
	Annual site tonnage (tons/year):	840
	Maximum daily site tonnage (kg/day)	2300
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	365
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from wide dispersive use (regional only):	0,001
	Release fraction to wastewater from wide dispersive use:	0,00001
	Release fraction to soil from wide dispersive use (regional only):	0,00001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by the freshwater,No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	Not applicable
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater	
	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls,Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery	This substance is consumed during use and no	

of waste	waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects,Risk Management Measures are based on qualitative risk characterisation,Available hazard data do not support the need for a DNEL to be established for other health effects,Users are advised to consider national Occupational Exposure Limits or other equivalent values,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

4.2. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : EC 265-198-5 = 0,0000056,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : EC 265-198-5 = 0,00015

1. Exposure scenario 12c

Use as a fuel

ES Ref.: 12c ES Type: Consumer Version: 2 (CONCAWE 2019)	

Use descriptors	PC13 ERC9a, ERC9b ESVOC SPERC 9.12c.v1
Processes, tasks activities covered	Covers consumer uses in liquid fuels. Consumer use (C)
Assessment method	Used ECETOC TRA model The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

2. Operational conditions and risk management measures

2.1 Contributing scenario consumer end-use (PC13)

PC13	Fuels

Product characteristics

Physical form	Liquid
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Vapour pressure	Liquid, vapour pressure > 10 Pa. (STP)
Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	unless stated differently,Covers use up to (g)	50000
	Covers skin contact area up to (cm2)	420
Frequency and duration of use	unless stated differently,Covers use up to	Uses per day
	Covers exposure up to	2 Hours/event
Other given operational conditions affecting consumers exposure	Covers use at ambient temperatures,Unless otherwise stated	
	Covers use in room size of (m3)	20
	Covers use under typical household ventilation.	
	Fuels,Liquid: Automotive Refuelling	Unless otherwise stated. Covers concentrations up to 100%. Covers use up to 52. days/year. covers use up to 1 time/on day of use. Covers skin contact area up to 210 cm2. For each use event, covers use amounts up to: 50000 g. Covers outdoor use. Covers use in room size of 100 m3. Covers exposure up to 0,05. Hours/event
	Fuels,Liquid: Home space heater fuel	Unless otherwise stated. Covers concentrations up to 100%. Covers use up to 365. days/year. covers use up to 1 time/on day of use. Covers skin contact area up to 210 cm2. For each use event, covers use amounts up to: 1500 g. Covers use under typical household ventilation. Covers use in room size of 20 m3. Covers exposure up to 0,03. Hours/event

	Fuels,Liquid, Garden equipment - Use	Unless otherwise stated. Covers concentrations up to 100%. Covers use up to 26. days/year. covers use up to 1 time/on day of use. For each use event, covers use amounts up to: 1000 g. Covers outdoor use. Covers use in room size of 100 m3. Covers exposure up to 2,00. Hours/event
	Fuels,Liquid: Garden equipment - Refuelling	Unless otherwise stated. Covers concentrations up to 100%. Covers use up to 26. days/year. covers use up to 1 time/on day of use. Covers skin contact area up to 420 cm2. For each use event, covers use amounts up to: 1000 g. Covers use in a one car garage (34m³) under typical ventilation. Covers use in room size of 34 m3. Covers exposure up to 0,03. Hours/event

Risk management measures

Other risk management measures:

Fuels,Liquid: Automotive Refuelling	No specific risk management measure identified beyond those operational conditions stated.	
Fuels,Liquid: Home space heater fuel	No specific risk management measure identified beyond those operational conditions stated.	
Fuels,Liquid, Garden equipment - Use	No specific risk management measure identified beyond those operational conditions stated.	
Fuels,Liquid: Garden equipment - Refuelling	No specific risk management measure identified beyond those operational conditions stated.	

2.2 Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.12c.v1)

ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
ESVOC SPERC 9.12c.v1	Use as a fuel: Consumer (SU21)
Assessment method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	76000
	Fraction of regional tonnage used locally:	0,0005
	Annual site tonnage (tons/year):	38
	Maximum daily site tonnage (kg/day)	100
Frequency and duration of use	Continuous use/release.	
	Number of emission days per year	365
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	Release fraction to air from wide dispersive use (regional only):	0,0001
	Release fraction to wastewater from wide dispersive use:	0,00001
	Release fraction to soil from wide dispersive use (regional only):	0,00001

Risk management measures

Conditions and measures related to sewage treatment	Not applicable as there is no release to wastewater	

plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	95,1
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	
	Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls,Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	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 ES

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given 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.

4.2. Environment

Guidance - 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,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html),RCRair - Maximum Risk Characterization Ratios for air emissions : EC 265-198-5 = 0,00000098,RCRwater - Maximum Risk Characterization Ratios for wastewater emissions : EC 265-198-5 = 0,00014