SAFETY DATA SHEET
JET A-1, containing Neste MY Sustainable Aviation Fuel (HEFA-SPK)

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

1.1. Product identifier

Product name JET A-1, containing Neste MY Sustainable Aviation Fuel (HEFA-SPK)

Product number ID 15843

UFI UFI: 96VD-G1GM-C004-NQ0D

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

Identified uses Use as a fuel (ES012a, ES012b)

Uses advised against Uses in coatings Use in cleaning agents Lubricants Metal working fluids/rolling oils Use as binders and release agents Use in agrochemicals Road and construction applications Explosives manufacture & use (Professional, consumer use)

1.3. Details of the supplier of the safety data sheet

Supplier Neste Components B.V.
Mercuriusplein 1, 2132 HA Hoofddorp, The Netherlands
sds@neste.com (chemical safety)

1.4. Emergency telephone number

Emergency telephone +61 2 9186 1132, Chemwatch: International Emergency Response Phone Number

National emergency telephone number +358 800 147 111, +358 9 471 977, Poison Information Centre

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (SI 2019 No. 720)

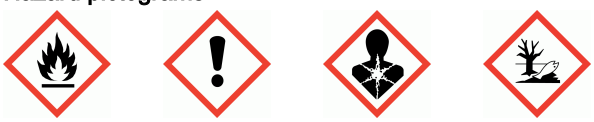
Physical hazards Flam. Liq. 3 - H226

Health hazards Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Carc. 2 - H351 STOT SE 3 - H336 STOT RE 2 - H373 Asp. Tox. 1 - H304

Environmental hazards Aquatic Chronic 2 - H411

2.2. Label elements

Hazard pictograms



Signal word Danger

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Hazard statements

H226 Flammable liquid and vapour.
H332 Harmful if inhaled.
H315 Causes skin irritation.
H351 Suspected of causing cancer.
H336 May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.
H304 May be fatal if swallowed and enters airways.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 Avoid release to the environment.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P261 Avoid breathing vapours.
P280 Wear protective gloves.

Contains

Renewable hydrocarbons (kerosine type fraction), Distillates (petroleum), light hydrocracked, Kerosine (petroleum), hydrodesulfurized, Kerosine (petroleum), sweetened, Distillates (petroleum), hydrotreated light, Kerosine (petroleum)

2.3. Other hazards

Other hazards

Evaporates slowly. May cause eye and respiratory system irritation. Risk of soil and ground water contamination.

This product does not contain substances considered to have endocrine disrupting properties at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Renewable hydrocarbons (kerosine type fraction) **≤ 50 %**

CAS number: —

Classification
Flam. Liq. 3 - H226
Asp. Tox. 1 - H304

Distillates (petroleum), light hydrocracked **0-50 %***

CAS number: 64741-77-1 EC number: 265-078-2

Classification
Acute Tox. 4 - H332
Skin Irrit. 2 - H315
Carc. 2 - H351
STOT RE 2 - H373
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

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Kerosine (petroleum), hydrodesulfurized **0-50 %***

CAS number: 64742-81-0 EC number: 265-184-9

Classification
Flam. Liq. 3 - H226
Skin Irrit. 2 - H315
STOT SE 3 - H336
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

Kerosine (petroleum) **0-50 %***

CAS number: 8008-20-6 EC number: 232-366-4

Classification
Flam. Liq. 3 - H226
Skin Irrit. 2 - H315
STOT SE 3 - H336
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

Distillates (petroleum), hydrotreated light **0-50 %***

CAS number: 64742-47-8 EC number: 265-149-8

Classification
Flam. Liq. 3 - H226
Skin Irrit. 2 - H315
STOT SE 3 - H336
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

Kerosine (petroleum), sweetened **0-50 %***

CAS number: 91770-15-9 EC number: 294-799-5

Classification
Flam. Liq. 3 - H226
Skin Irrit. 2 - H315
STOT SE 3 - H336
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments Mixture of renewable raw material fuel, petroleum product and additives. Total aromatics at maximum: 13,5 %. Naphthalene (CAS 91-20-3) < 1%. Toluene (CAS 108-88-3) < 1%. Benzene (CAS 71-43-2) < 0,1 %. * Total content of fossil components ≥ 50%.

Ingredient notes Renewable hydrocarbons (kerosine type fraction): REACH reg. no. 01-2119850115-46-0000 , -0002. Identity outside the EU (CAS number and name of the substance): Alkanes, C8-18-branched and linear (CAS 2252265-89-5)

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Other information REACH registration numbers:, Renewable hydrocarbons (kerosine type fraction): 01-2119850115-46, Distillates (petroleum), light hydrocracked: 01-2119474208-35-XXXX, Kerosine (petroleum), hydrodesulfurized: 01-2119462828-25-XXXX, Kerosine (petroleum): 01-2119485517-27, Kerosine (petroleum), sweetened: 01-2119502385-46-XXXX, Distillates (petroleum), hydrotreated light; Kerosine - unspecified: 01-2119484819-18-XXXX

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Remove person to fresh air and keep comfortable for breathing. For breathing difficulties, oxygen may be necessary. If breathing stops, provide artificial respiration. Get medical attention if symptoms are severe or persist.

Ingestion Do not induce vomiting. Get medical attention immediately.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if irritation persists after washing.

Eye contact Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.

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

General information Irritating to skin. May irritate eyes. Vapours in high concentrations are narcotic. May cause nausea, headache, dizziness and intoxication. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.

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

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Flammable liquid and vapour. Containers can burst violently or explode when heated, due to excessive pressure build-up.

Hazardous combustion products Carbon dioxide (CO2). Carbon monoxide (CO).

5.3. Advice for firefighters

Protective actions during firefighting Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid inhalation of vapours and contact with skin and eyes. Wear adequate protective equipment at all operations.

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For emergency responders Prevent unauthorized access. Vapours are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back. Eliminate all ignition sources if safe to do so. Take precautionary measures against static discharge.

6.2. Environmental precautions

Environmental precautions Avoid release to the environment. Stop leak if safe to do so. Avoid the spillage or runoff entering drains, sewers or watercourses. Contain spillage with sand, earth or other suitable non-combustible material. Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air). Risk of soil and ground water contamination.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Immediately start clean-up of the liquid and contaminated soil. Small Spillages: Absorb spillage with sand or other inert absorbent. Pay attention to the fire and health hazards caused by the product. Take care as floors and other surfaces may become slippery.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions The product contains volatile substances which may spread in the atmosphere. Avoid heat, flames and other sources of ignition. Take precautionary measures against static discharges. Use only non-sparking tools. Ground/bond container and receiving equipment. All handling should only take place in well-ventilated areas. Avoid inhalation of vapours and contact with skin and eyes. Use personal protective equipment and/or local ventilation when needed. Do not eat, drink or smoke when using this product. Wash hands and any other contaminated areas of the body with soap and water before leaving the work site. Wash contaminated clothing before reuse. During tank operations follow special instructions (risk of oxygen displacement and hydrocarbons).

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Flammable liquid storage. Vapours may form explosive mixtures with air. Store in accordance with local regulations. Store in a demarcated bunded area to prevent release to drains and/or watercourses. Only store in correctly labelled containers. Use containers made of the following materials: Mild steel. Stainless steel. Keep container tightly closed. Protect from sunlight.

7.3. Specific end use(s)

Specific end use(s) Not known.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

Naphthalene: 10 ppm (8h), 50 mg/m3 (8h), EU OELV (EC/1991/322).
Naphthalene: 50 mg/m3 (8h), 80 mg/m3 (15min), NL WG.

Ingredient comments Kerosine as total hydrocarbon vapor; ACGIH TLV®-TWA (8h) 200 mg/m3 (non-aerosol).

DNEL * Total content of fossil components:
kerosene
General population - Oral; Long term systemic effects: 19 mg/kg bw/day

PNEC Not available.

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Renewable hydrocarbons (kerosine type fraction)

DNEL	Workers - Dermal; Long term systemic effects: 42 mg/kg/day Workers - Inhalation; Long term systemic effects: 147 mg/m³

Distillates (petroleum), light hydrocracked (CAS: 64741-77-1)

DNEL	Workers - Inhalation; Short term systemic effects: 4300 mg/m³, (15 min), Aerosol Workers - Inhalation; Long term systemic effects: 68 mg/m³, (8h), Aerosol Workers - Dermal; Long term systemic effects: 2,9 mg/kg/day, (8h)

8.2. Exposure controls

Appropriate engineering controls	All handling should only take place in well-ventilated areas. Use personal protective equipment and/or local ventilation when needed. Handle in accordance with good industrial hygiene and safety practice. During tank operations follow special instructions (risk of oxygen displacement and hydrocarbons).
Eye/face protection	Spectacles.
Hand protection	Wear protective gloves. It is recommended that gloves are made of the following material: Nitrile rubber. Neoprene. Polyvinyl chloride (PVC). The breakthrough time for any glove material may be different for different glove manufacturers. Protective gloves according to standard EN 374. Change protective gloves regularly.
Other skin and body protection	Protective clothing when needed. Wear anti-static protective clothing if there is a risk of ignition from static electricity.
Respiratory protection	Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit. Wear a respirator fitted with the following cartridge: Gas filter, type A2. Gas and combination filter cartridges suitable for intended use should be used. Filter must be changed often enough.
Environmental exposure controls	Store in a demarcated bunded area to prevent release to drains and/or watercourses.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Clear.
Odour	Hydrocarbons.
Odour threshold	-
pH	-
Melting point	< -47°C
Initial boiling point and range	115...300°C (ASTM D 86)
Flash point	≥ 38°C (IP170)
Upper/lower flammability or explosive limits	Lower flammable/explosive limit: 0,6 % Upper flammable/explosive limit: 6 %
Vapour pressure	~ 2 kPa @ 38°C
Vapour density	> 3 (Air = 1.0)
Relative density	0,78...0,84 @ 15/4°C

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Solubility(ies)	The product has poor water-solubility. < 50 mg/l @ 20°C
Partition coefficient	Not available.
Auto-ignition temperature	207...250°C (EN 14522)
Decomposition Temperature	-
Viscosity	Kinematic viscosity < 7 mm2/s @ 40°C (EN ISO 3104) Dynamic viscosity < 4 mPa s @ 20°C (EN ISO 3104)
Explosive properties	Not considered to be explosive.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information	Not known.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	There are no known reactivity hazards associated with this product.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	No potentially hazardous reactions known.

10.4. Conditions to avoid

Conditions to avoid	Keep away from heat, sparks and open flame.

10.5. Incompatible materials

Materials to avoid	Oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products	Does not decompose when used and stored as recommended.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects	Harmful by inhalation.

Acute toxicity - oral

Summary	Not classified.
Notes (oral LD_{50})	LD_{50} > 2000 mg/kg, Oral, Rat

Acute toxicity - dermal

Summary	Not classified.
Notes (dermal LD_{50})	LD_{50} > 2000 mg/kg, Dermal, Rabbit

Acute toxicity - inhalation

Summary	CAS 64741-77-1 : Harmful by inhalation. Renewable hydrocarbons (kerosene type fraction), kerosene : Based on available data the classification criteria are not met.

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Notes (inhalation LC_{50})	LD_{50}, CAS 64741-77-1 ≥ 4.1 mg/l, Inhalation, Rat LC_{50}, kerosene > 5.28 mg/l, Inhalation, Rat
ATE inhalation (dusts/mists mg/l)	4.29

Skin corrosion/irritation

Skin corrosion/irritation	Irritating to skin. The product irritates mucous membranes and may cause abdominal discomfort if swallowed. May cause respiratory irritation.

Serious eye damage/irritation

Serious eye damage/irritation	Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation	Based on available data the classification criteria are not met.

Germ cell mutagenicity

Summary	Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity	CAS 64741-77-1 : Suspected of causing cancer. Renewable hydrocarbons (kerosene type fraction), kerosene : Based on available data the classification criteria are not met.

Reproductive toxicity

Summary	Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure	May cause nausea, headache, dizziness and intoxication. Anaesthetic in high concentrations.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	CAS 64741-77-1 : May cause damage to organs through prolonged or repeated exposure. Renewable hydrocarbons (kerosene type fraction), kerosene : Based on available data the classification criteria are not met.

Aspiration hazard

Aspiration hazard	May be fatal if swallowed and enters airways. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.

General information	This product does not contain substances considered to have endocrine disrupting properties at levels of 0.1% or higher.

Toxicological information on ingredients.

Renewable hydrocarbons (kerosine type fraction)

Acute toxicity - oral

Notes (oral LD_{50})	LD_{50} > 2000 mg/kg, Oral, Rat (EC B1 tris)

Acute toxicity - dermal

Notes (dermal LD_{50})	LD_{50} > 2000 mg/kg, Dermal, Rat (EC B3)

SECTION 12: Ecological information

12.1. Toxicity

Toxicity	Toxic to aquatic life with long lasting effects.

Acute aquatic toxicity

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Acute toxicity - fish	* Total content of fossil components: LL_{50}, : > 1 - ≤ 10 mg/l,
Acute toxicity - aquatic invertebrates	* Total content of fossil components: EL50, : > 1 - ≤ 10 mg/l,
Acute toxicity - aquatic plants	* Total content of fossil components: EL50, : > 1 - ≤ 10 mg/l,
Acute toxicity - microorganisms	* Total content of fossil components: LL_{50}, : > 100 mg/l,

Chronic aquatic toxicity

Chronic toxicity - fish early life stage	* Total content of fossil components: NOEL, : > 0.01 - ≤ 0.1 mg/l,
Chronic toxicity - aquatic invertebrates	* Total content of fossil components: NOEL, : > 0.1 - ≤ 1.0 mg/l,

Ecological information on ingredients.

Renewable hydrocarbons (kerosine type fraction)

Acute aquatic toxicity

Acute toxicity - fish	LL_{50}, 96 hours: > 1000 mg/l, WAF (OECD 203)
Acute toxicity - aquatic invertebrates	EL50, 48 hours: > 100 mg/l, WAF (OECD 202)
Acute toxicity - aquatic plants	EL50, 72 hours: > 100 mg/l, WAF (OECD 201)
Acute toxicity - microorganisms	EC_{50}, 3 hours: > 1000 mg/l, Micro-organisms (wastewater sludge) (OECD 209)

Chronic aquatic toxicity

Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 1 mg/l, LOEC, 21 days: 3,2 mg/l, Daphnia magna WAF (OECD 211) NOEC, 10 days: 373 mg/kg, LC_{50}, 10 days: 1200 mg/kg, Sediment organisms (OSPAR Protocols, Part A: Sediment Bioassay, 2005)

12.2. Persistence and degradability

Persistence and degradability	The product contains volatile substances which may spread in the atmosphere. Can be photodegraded in the atmosphere.
Stability (hydrolysis)	No significant reaction in water.
Biodegradation	* Total content of fossil components: Inherently biodegradable.

Ecological information on ingredients.

Renewable hydrocarbons (kerosine type fraction)

Biodegradation	Rapidly degradable (OECD 301B)

12.3. Bioaccumulative potential

JET A-1, containing Neste MY Sustainable Aviation Fuel (HEFA-SPK)

Bioaccumulative potential Possibly bioaccumulative.

Partition coefficient Not available.

12.4. Mobility in soil

Mobility Evaporates slowly. The product has poor water-solubility. Product can penetrate soil until reaching the surface of ground water. The product contains substances which are bound to particulate matter and are retained in soil.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects Product causes fouling, and direct contact produces harmful effects e.g. to birds and vegetation. Adsorbed hydrocarbon residues can be harmful to sediment organisms.

Endocrine-disrupting properties This product does not contain substances considered to have endocrine disrupting properties at levels of 0.1% or higher.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

Waste class The waste code classification is to be carried out according to the European Waste Catalogue (EWC). For example: 13 07 03 other fuels (including mixtures)

SECTION 14: Transport information

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

14.1. UN number

UN No. (ADR/RID) 1863

14.2. UN proper shipping name

Proper shipping name (ADR/RID) UN 1863 FUEL, AVIATION, TURBINE ENGINE

14.3. Transport hazard class(es)

ADR/RID class 3

14.4. Packing group

ADR/RID packing group III

14.5. Environmental hazards

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Environmentally hazardous substance/marine pollutant

MARINE POLLUTANT

14.6. Special precautions for user

Hazard Identification Number (ADR/RID)	30
Tunnel restriction code	(D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

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

National regulations	UK Registration number: UK-01-5174728449-8-XXXX OR UK: Penman Consulting Limited 42, Aspect House, Waylands Avenue, Grove Business Park, Wantage, Oxon, OX12 9FF, United Kingdom; Telephone: 01367 718474; Email: pcltd42@penmanconsulting.com. EU regulatory references for the safety data sheet: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended) Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet	EU OELV = European Occupational Exposure Limit Value
Key literature references and sources for data	Regulations, databases, literature, own research. CONCAWE Report 13/17: Hazard classification and labelling of petroleum substances in the EEA - 2017. Chemical Safety Report Distillates (petroleum), hydrotreated light, 2019. Chemical Safety Report Kerosine (petroleum), hydrodesulfurized, 2019. Chemical Safety Report Kerosine (petroleum), sweetened, 2019. Chemical Safety Report Renewable hydrocarbons (kerosene type fraction): 2011.
Training advice	DO NOT SIPHON PRODUCT BY MOUTH SUCTION.
Revision comments	Updated, sections: 1.1 NOTE: Lines within the margin indicate significant changes from the previous revision.
Revision date	12/07/2023
Supersedes date	03/01/2023
SDS number	5641

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Hazard statements in full

H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H332 Harmful if inhaled.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Exposure scenario
Use as a Fuel - Industrial

Identification

Product name	Kerosines
Version number	2018
Es reference	ES12a

1. Title of exposure scenario

Main title	Use as a Fuel - Industrial
Process scope	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Environment

Environmental release category	ERC7 Use of functional fluid at industrial site
SPERC	ESVOC SPERC 7.12a.v1

Worker

Process category	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

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region: 0.1
Regional use tonnage: 1,600,000 tonnes/year
Fraction of Regional tonnage used locally: 1
Annual site tonnage: 1,500,000 tonnes
Maximum daily site tonnage: 5000 tonnes

Frequency and duration of use

Continuous release.
Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 5.0E-02
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1.0E-05
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0

Environmental factors not influenced by risk management measures

Use as a Fuel - Industrial

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

Risk management measures

Good practice	Common practices vary across sites, thus conservative process release estimates used. Risk from environmental exposure is driven by freshwater sediment.
STP type	Municipal STP.
STP details	Estimated substance removal from wastewater via domestic sewage treatment: 95.0% Removal efficiency (total): 95% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 2.1E+06 tonne/day Assumed domestic sewage treatment plant flow (m³/day): 2000.

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

Air	Treat air emission to provide a typical removal efficiency of 95%.
Water	Prevent leaks and prevent soil/water pollution caused by leaks. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 94.4 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0.0
Soil	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers percentage substance in the product up to 100% (unless stated differently).

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Setting	Assumes a good basic standard of occupational hygiene is implemented.
Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational 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.

Use as a Fuel - Industrial

Risk management measures

General exposures (closed systems)
No other specific measures identified.
.
Use as a fuel
(closed systems)
No other specific measures identified.
.
Bulk transfers
No other specific measures identified.
.
Drum/batch transfers
No other specific measures identified.
.
Equipment cleaning and maintenance
No other specific measures identified.
.
Bulk product storage
No other specific measures identified.

3. Exposure estimation (Environment 1)

Assessment method

Used Petrorisk model. (Hydrocarbon Block Method)

Maximum Risk Characterisation Ratios for air emissions 2.9E-02 Maximum Risk Characterisation Ratios for wastewater emissions 9.0E-01

4. Guidance to check compliance with the exposure scenario (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method

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

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Qualitative approach used to conclude safe use. 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.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use as a Fuel - Professional

Identification

Product name	Kerosines
Version number	2018
Es reference	ES12b

1. Title of exposure scenario

Main title	Use as a Fuel - Professional
Process scope	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Environment

Environmental release category	ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
SPERC	ESVOC SPERC 9.12b.v1

Worker

Process category	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

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region: 0.1
Regional use tonnage: 4,600,000 tonnes/year
Fraction of Regional tonnage used locally: 1
Annual site tonnage: 2300 tonnes
Maximum daily site tonnage: 6.4 tonnes

Frequency and duration of use

Continuous release.
Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from wide dispersive use (regional only): 1.0E-03
Emission factor - water	Release fraction to wastewater from wide dispersive use: 1.0E-05
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 1.0E-05

Environmental factors not influenced by risk management measures

Use as a Fuel - Professional

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

Risk management measures

Good practice	Common practices vary across sites, thus conservative process release estimates used. Risk from environmental exposure is driven by fresh water.
STP type	Municipal STP.
STP details	Estimated substance removal from wastewater via domestic sewage treatment: 95.0% Removal efficiency (total): 95.0% Maximum allowable site tonnage (Msafe), based on release following total wastewater treatment removal: 2.9E+05 kg/day Assumed domestic sewage treatment plant flow (m³/day): 2000.

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

Air	Treat air emission to provide a typical removal efficiency of N/A%.
Water	Prevent leaks and prevent soil/water pollution caused by leaks. Onsite wastewater treatment required. Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0.0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0.0
Soil	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers percentage substance in the product up to 100% (unless stated differently).

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Setting	Assumes a good basic standard of occupational hygiene is implemented.
Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational 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.

Use as a Fuel - Professional

Risk management measures

General exposures (closed systems)
No other specific measures identified.
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Use as a fuel
(closed systems)
No other specific measures identified.
.
Bulk transfers
No other specific measures identified.
.
Transfer from/pouring from containers
No other specific measures identified.
.
Equipment cleaning and maintenance
No other specific measures identified.
.
Bulk product storage
No other specific measures identified.

3. Exposure estimation (Environment 1)

Assessment method

Used Petrorisk model. (Hydrocarbon Block Method)

Maximum Risk Characterisation Ratios for air emissions 4.4E-04 Maximum Risk Characterisation Ratios for wastewater emissions 3.4E-03

4. Guidance to check compliance with the exposure scenario (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method

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

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Qualitative approach used to conclude safe use. 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.

4. Guidance to check compliance with the exposure scenario (Health 1)

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