SAFTEY DATA SHEET

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

1.1. PRODUCT IDENTIFIER

Product name: **AVIATION TURBINE FUEL**
Product description: Hydrocarbons and additives

Trade names	Trade names
JET A-1	TURBO A-1 JET

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Intended use: Fuel for aviation turbine engines

Identified uses according to EU REACH:
Distribution of the substance
Formulation and (re)packing of the substances and mixtures
Use as fuel - Industrial
Use as fuel – Commercial users
Use as fuel - Consumers

Uses advised against: This product must not be used in applications other than those listed above.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: **SOCAR Energy Switzerland GmbH**
Nüschelerstrasse 24
CH-8021 Zürich
Switzerland

Telephone: +41 (0) 44 214 41 11
E-Mail Contact for Safety Data Sheer: socarinfo@socarenergy.com

1.4. EMERGENCY TELEFON NUMBER

Tox Info Suisse (24/7): 145

SECTION 2 HAZARD IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification according Regulation (EC) No 1272/2008
Flammable liquids: Category 3
Skinn irritation: Category 2
Acute toxicity: Category 4
Specific target organ toxicity (central nervous system): Category 3
Aspiration hazard: Category 1
Carcinogenicity: Category 2
Long-term (chronic) aquatic hazard: Category 2

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.
EUH066: Repeated exposure may cause skin dryness or cracking.

2.2. LABEL ELEMENTS

Labelling according Regulation (EC) No. 1272/2008

Hazard pictograms:

Signal word: Danger

Hazard statements

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.
EUH066: Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe dust / fume / gas / mist / vapours / spray.
P273: Avoid release to the environment.
P280: Wear protective gloves / protective clothing / eye protection / face protection.
P301 + P310: IF SWALLOWED: Immediately call Tox Info Suisse / doctor.
P331: Do NOT induce vomiting.
P403 + P223: Store in a well-ventilated place. Keep container tightly closed.
P501: Dispose of contents / container in accordance with national regulations.

2.3. OTHER HAZARDS

Physical-chemical hazards:
The material may accumulate static charges, which may cause ignition. The material may release vapours which can quickly form flammable mixtures. Accumulation of vapours may deflagrate or explode on ignition.

Health hazards:
Injection under the skin with high pressure may cause severe damage. May cause irritation to eyes, nose, throat and lungs. Inhalation of high vapour concentrations may cause dizziness, lightheadedness, headache, nausea and loss of coordination. Further inhalation may cause unconsciousness.

Environmental hazards:
No further hazards. The product does not fulfil the PBT or vPvB criteria according to Annex XIII of the REACH Regulation.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1. SUBSTANCE
Not applicable. This product is classified as a mixture.

3.2. MIXTURE
Complex mixture of hydrocarbons.

Hazardous components

Chemical name	CAS No.	EC No.	Registration No.	Concentration	GHS/CLP Classification
Kerosine	8008-20-6	232-366-4	01-2119485517-27	<= 100%	Flam. Liq.3; H226 Asp. Tox.1; H304 Skin Irrit.2; H315 STOT RE3; H336 Aquatic Chronic2; H411

Further components

Chemical name	CAS No.	EC No.	Concentration	Classification
Cumene	98-82-8	202-704-5	< 1%	Flam. Liq.3; H226 Asp. Tox.1; H304 STOT SE3; H335 STOT SE3; H336 Carc. 1B; H350 Aquatic Chronic2; H411

Toluene	108-88-3	203-625-9	< 25%	Flam. Liq.2; H225 Asp. Tox.1; H304 Repr.2; H361 STOT SE3; H336 STOT RE2; H373 Skin Irrit.2; H315 Aquatic Chronic3; H412
Ethylbenzene	100-41-4	202-849-4	< 2%	Flam. Liq.2; H225 Acute Tox. 4 ; H332 Skin Irrit.2; H315 STOT RE2; H373 Asp. Tox.1; H304
Naphthalene	91-20-3	202-049-5	< 1%	Acute Tox.4; H302 Carc.2; H351 Aquatic Acute1; H400 Aquatic Chronic1; H410
Xylene	1330-20-7	215-535-7	< 2%	Flam. Liq.3; H226 Acute Tox.4; H312 Acute Tox.4; H332 Skin Corr.2; H315 Eye Irrit.2; H319 STOT SE3; H335 STOT RE2; H373 Asp. Tox.1; H304 Aquatic Chronic3; H412

For explanation of abbreviations see section 16.

SECTION 4 FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION
Remove from the contact area. Helpers must avoid exposure to themselves and others. Wear suitable respiratory protection. In case of respiratory irritation, dizziness, nausea or unconsciousness, seek medical attention immediately. In case of respiratory arrest, support breathing with a respirator or mouth-to-mouth ventilation.

SKIN CONTACT
Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse. If the product has been injected into or under the skin or into any part of the body, the person should be assessed immediately by a physician as a surgical emergency, regardless of the appearance or size of the wound. Although symptoms from high pressure injection may be minimal or absent initially, early surgical treatment within the first few hours may significantly reduce the final extent of the injury.

EYE CONTACT
Rinse thoroughly with water. If irritation occurs, seek medical attention.

INGESTION
Seek medical attention immediately. Do not induce vomiting.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED
Headache, dizziness, fatigue, nausea and other effects on the central nervous system. Itching, pain, redness, swelling of the skin.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED
If ingested, the material may be aspirated into the lungs and cause chemical pneumonia. Treat accordingly. Hydrocarbon solvents/petroleum hydrocarbons - Contact with skin may aggravate existing skin inflammation.

SECTION 5 FIREFIGHTING MEASURES

5.1. EXTINGUISHING MEDIA
Suitable extinguishing media: Use water mist, foam, powder- or carbon dioxide fire extinguishers for extinguishing.

Unsuitable extinguishing media: Do not use direct water jets.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE
Hazardous combustion products: Smoke, fumes, aldehydes, sulphur oxides, products of incomplete combustion, carbon oxides.

5.3. ADVICE FOR FIREFIGHTERS
Fire-fighting instructions: Evacuate the area. Do not allow run-off fire-fighting materials or their dilutions to reach water bodies, sewage systems or drinking water reservoirs. Firefighters should use standard protective equipment and self-contained breathing apparatus. Use a water mist to cool surfaces exposed to fire and protect workers.

Unusual fire hazards: Flammable. Hazardous material. Firefighters should consider protective equipment (see section 8). Vapours are flammable and heavier than air. Vapours may travel along the ground and reach distant sources of ignition. There is then a risk of flashback.

SECTION 6 ACCIDENTIAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

NOTIFICATION PROCEDURES
In case of a spill or accidental release, notify the appropriate authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES
Avoid contact with the spilled material. If necessary, warn or evacuate residents in the vicinity and downwind areas as the material is toxic or flammable. See section 5 for fire-fighting information. For significant hazards, see the section “Possible hazards”. For advice on first aid, see section 4. For advice on minimum personal protective equipment requirements, see section 8. Additional protective measures may be necessary depending on the specific conditions and/or the expert judgement of the first aider. For first responders: Respiratory protection: Respirator with half mask or full facepiece and with filter for organic vapours and H2S if applicable, or self-contained breathing apparatus may be used, depending on the size of the spill and the potential extent of exposure. If exposure cannot be fully characterised, or if a low oxygen atmosphere is possible or expected, then self-contained breathing apparatus is recommended. Work gloves resistant to aromatic hydrocarbons are recommended.

Note: Polyvinyl acetate (PVA) gloves are not water repellent and are not suitable for use in emergencies. Small quantities of spillage: Usual antistatic work clothing is usually sufficient. Large quantities of spillage: Full body suit made of chemically resistant, antistatic and, if necessary, heat resistant and thermally insulating material is recommended.

6.2. ENVIRONMENTAL PRECAUTIONS
Large quantities of spilled material: Contain far away from the liquid spill and absorb and dispose of later. Prevent

penetration into watercourses, sewers, cellars or enclosed areas.

6.3. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Land release: DISCONTINUE all sources of ignition (no smoking, no flares, sparks or flames in the immediate vicinity). Seal the point of discharge as far as this can be done without danger. All equipment used to handle the product must be earthed. Do not touch or walk through spilled material. Prevent entry into bodies of water, sewers, cellars or enclosed spaces. Vapour suppressing foam may be used to reduce vapours. Use clean tools that do not produce sparks to collect absorbed material. Absorb with dry earth, sand or non-flammable material or cover and place in containers. Large quantities of spilled material: Sprinkling with water may reduce vapours but may not prevent ignition in enclosed spaces.

Release into water: Seal the point of release as far as this is possible without danger. Eliminate sources of ignition. Warn other shipping traffic. If flash point is at least 10°C above outside temperature, use containment barriers and remove from surface by skimming or, if possible, by suitable absorbents.

Recommendations for spills in water or on land are based on the most likely accident scenarios for that substance. Geographical conditions, wind, temperature (and in the case of spills in water) waves and current direction and speed can significantly influence the measures to be taken. Local experts should therefore be consulted.

Note: Local guidelines may prescribe or limit measures to be taken.

6.4. REFERENCE TO OTHER SECTIONS

See Section 6.1.

SECTION 7 HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Avoid all contact. Do not aspirate by mouth. Do not use as a cleaning solvent or for other purposes (except as engine fuel). For use as engine fuel only. It is dangerous and/or illegal to pour paraffin into unauthorised containers. Do not fill the container when it is in or on a vehicle. Static electricity can ignite vapours and cause fire. When filling, place the container on the ground and keep the filler neck in contact with the container. Do not use electronic equipment in or around fuel filling or storage areas. Prevent small spills and leaks to avoid slip hazards. The material may accumulate static charges which may cause an electrical spark (ignition source). Apply regulations and procedures for careful earthing / connection. Nevertheless, earthing / connection cannot eliminate the risk of static charge.

Static Accumulator: This material is a static accumulator.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The choice of container, e.g. a storage container, may have an effect on static charging and dissipation. Keep the containers closed. Handle the containers with care. Open slowly to check for possible pressure release. Store in a cool, well-ventilated area. Storage containers should be properly grounded.
Fixed storage containers, transfer containers and associated equipment should be properly grounded to prevent accumulation of static charges.

7.3. SPECIFIC END USE(S): Section 1 provides information on identified uses. No industry or sector specific guidance available.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS

Exposure limits values / guide values (Note: Exposure limit values are absolute):

Component	Form	Limit value / standard			Note	Source
Kerosine		TWA	525 mg/ m^3	100 ppm	skin	OEL (SUVA)
Ethylbenzene		STEL	220 mg/ m^3	50 ppm	skin	OEL (SUVA)
Ethylbenzene		TWA	220 mg/m3	50 ppm	skin	OEL (SUVA)
Cumene		STEL	400 mg/m^3	80 ppm	skin	OEL (SUVA)
Cumene		TWA	100 mg/m^3	20 ppm	skin	OEL (SUVA)
Xylene		STEL	870 mg/m^3	200ppm	skin	OEL (SUVA)
Xylene		TWA	435 mg/m^3	100ppm	skin	OEL (SUVA)
Naphthalene		TWA	50 mg/m^3	10ppm	skin	OEL (SUVA)

Biological occupational exposure limits:

Component	Control parameters	Sampling time	limit	Parameter	Source
Ethylbenzene	Creatinine in Urine	End of exposure / end of shift	600mg/g	N/A	BAT-Values (SUVA)
Cumene	Creatinine in Urine	End of exposure / end of shift	20mg/g	N/A	BAT-Values (SUVA)
Xylene	Blood	End of exposure / end of shift	1.5mg/l	N/A	BAT-Values (SUVA)
Xylene	Creatinine in Urine	End of exposure / end of shift	1.5g/g	N/A	BAT-Values (SUVA)

DERIVED NO EFFECT LEVEL (DNEL) according to Regulation (EC) No. 1907/2006

Component	End use	Inhalation	Dermal	Oral
Kerosene	Consumer	NA	NA	19mg/kg/day, Long-term systemic effects
Ethylbenzene	Worker	293mg/m3, acute, systemic effects	180mg/kg/day, systemic effects	NA
Ethylbenzene	Worker	77mg/m3, Long-term systemic effects	NA	NA
Ethylbenzene	Consumer	180mg/m3, acute, systemic effects	108mg/kg/day, systemic effects	7.1mg/kg/day, systemic effects
Ethylbenzene	Consumer	15mg/m3, Long-term systemic effects	NA	1.6mg/kg/day, Long-term systemic effects

PREDICTED NO EFFECT CONCENTRATION (PNEC) according to Regulation (EC) No. 1907/2006
Since it is a hydrocarbon mixture with variable composition, conventional methods are not suitable for determining the PNEC.

8.2. EXPOSURE CONTROLS

TECHNICAL PROTECTION DEVICES
The necessary degree of protection and the type of technical measures depend on the potential exposure conditions.

Possible technical measures: Use explosion-proof ventilation to stay below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
The choice of personal protective equipment depends on the potential exposure conditions, e.g. procedure, handling type, concentration and ventilation. The information below on the choice of protective equipment when using this material assumes intended normal use.
Respiratory protection: Where technical measures cannot maintain airborne concentrations of pollutants at a level sufficient for the health of workers, approved respiratory protection may be appropriate. Where applicable, the choice, use and maintenance of respiratory protection shall comply with the regulations. Respiratory protective devices suitable for this substance include:
Type A. filter material, Type P filter material, European Commission for Standardisation (CEN) standards EN 136, 140 and 405 give recommendations on respirators, and standards EN 149 and 143 give recommendations on breathing air filters.
Use an approved pressure hose device for high concentrations in the air. Hose devices with a self-rescuer may be appropriate in case of too low oxygen content, when dangerous concentrations of pollutants cannot be perceived, or the capacity / approval of filtering devices is not sufficient.

Hand protection: Specific information on gloves is based on published literature and glove manufacturers' data. Working conditions have a major impact on the life of the gloves. Gloves should be inspected and replaced when they show wear. Chemical resistant gloves are recommended. If contact with the forearms is possible, wear protective gloves with cuffs. Nitrile, Viton, CEN Standards EN 420 and EN 374 provide information on general requirements and the different types of gloves.

Eye protection: If contact is likely, chemical resistant safety glasses according to EN 166 are recommended.

Skin and body protection: Specific information on clothing is based on published literature and manufacturers' data. Protective clothing suitable for this material includes chemical/oil resistant clothing according to EN 14605.

Specific hygiene measures: Always maintain good personal hygiene, such as washing after handling the material and before eating, drinking and/or smoking. Clean work clothing and protective equipment regularly to remove contamination. Dispose of contaminated clothing and footwear that cannot be cleaned. Maintain order and cleanliness.

ENVIRONMENTAL EXPOSURE CONTROLS AND MONITORING
Comply with applicable environmental directives limiting discharge to air, water and soil. Apply appropriate protective measures to limit or prevent emissions to protect the environment.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are given for safety, health and environmental reasons only and may not fully represent product specifications.

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid
Colour: pale yellow
Odour: Mineral oil/solvent
Odour threshold: Data not available
Melting point: Technically not feasible
Freezing point: <= -47°C (-53°F) [Test method not available]
Boiling point / boiling range: 150 – 290°C
Auto-ignition temperature: Data not available
Explosive properties: None
Flash point [Method]: 38 - 62°C [ASTM D-93]

Ignition temperature: No data available
Decomposition temperature: No data available
pH: Technically not feasible
Kinematic viscosity: 1 - 2.5mm²/s at 40°C
Solubilities: Water negligible
Partition coefficient (n-octanol/water): > 3.5 [Test method not available]
Vapour pressure: < 0.133 kPa (1 mm Hg) at 20°C [EN 13016-1]
Density (at 15°C): 700 - 900kg/m³ [ASTM D4052]
Relative vapour density (air = 1): Data not available

9.2. OTHER INFORMATION

Conductivity: 50 - 600pS/m

SECTION 10 STABILITY AND REACTIVITY

10.1. REACTIVITY:
See the following subsections.

10.2. CHEMICAL STABILITY:
The material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS:
Hazardous polymerisation will not occur.

10.4. CONDITIONS TO AVOID:
Avoid heat, sparks, open flames and other ignition sources.

10.5. INCOMPATIBLE MATERIALS:
Halogens, strong acids, alkalis, strong oxidising agents.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS:
Hazardous decomposition products are not expected at ambient temperatures.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard class	Conclusion / Remarks
Inhalation	
Acute toxicity (Rat) 4h, LC50 > 5000 mg/m³ (vapour) Test results or other study results do not meet the criteria for classification.	Slightly toxic. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 403.
Irritation: Toxicological threshold of effect not present.	Elevated temperatures or mechanical operations may produce vapours, mists or fumes that may irritate the eyes, nose, throat and lungs.
Intake	
Acute toxicity (Rat), LD50 > 5000 mg/kg Test results or other study results do not meet the criteria for classification.	Slightly toxic. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 420.
Skin	

Acute toxicity (Rabbit), LD50 > 2000 mg/kg Test results or other study results do not meet the criteria for classification.	Slightly toxic. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 402.
Skin etching / irritation (Rabbit): Data available. Test results or other study results meet the criteria for classification.	Causes skin irritation. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 404.
Eye	
Serious eye damage/irritation (rabbit): Data available Test results or other study results do not meet the criteria for classification.	May cause slight short-term eye discomfort. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 405.
Sensitisation	
Respiratory sensitisation: No data on endpoints.	Not known to be a respiratory sensitizer.
Skin sensitisation: Data available Test results or other study results do not meet the criteria for classification.	Not known to be a skin sensitizer. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 406.
Suction: Data available	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ cell mutagenisity: Data available.	Not known to be a germ cell mutagen. Based on results from tests with structurally similar substances. 471 475 476 478 479
Carcinogenicity: Data available Test results or other study results do not meet the criteria for classification.	Not known to cause cancer. Based on results from tests with structurally similar substances. Test(s) equivalent or similar to OECD Guideline 451.
Reproductive toxicity: Data available Test results or other study results do not meet the criteria for classification.	Not known to be toxic to reproduction. Based on results from tests with structurally similar substances. 414 421
Lactation (breastfeeding): No data on endpoints.	No known harmful effect on infants via breast milk.
Specific target organ toxicity (STOT)	
Single exposure: No data on endpoints.	May cause drowsiness and dizziness.
Repeated exposure: Data available.	No known adverse effect on organs through prolonged or repeated exposure. Based on results from tests with structurally similar substances. 410 412

TOXICITY OF SUBSTANCES

NAME	ACUTE TOXICITY
Kerosene	Dermal lethality: LD50 > 2000 mg/kg (rabbit); Inhalation lethality: LC50 > 5.0 mg/l (rat); Oral lethality: LD50 > 5000 mg/kg (rat)
Naphthalene	Dermal lethality: LD50 > 2500 mg/kg (rat); Inhalation lethality: 4 hour(s) LC50 > 0.4 mg/l (max. attainable vapour conc.) (rat); Oral lethality: LD50 622 mg/kg (mouse).

FURTHER INFORMATION

From product:
Vapour/aerosol concentrations above recommended exposure concentrations are irritating to the eyes and respiratory system and may cause headache, dizziness, stupefaction, drowsiness, unconsciousness and other central nervous system effects, including death. If ingested or vomited, small amounts of fluid aspirated into the lungs may cause chemical pneumonitis or pulmonary oedema.

Contains:
KEROSENE: Carcinogenic in animal studies. Lifetime exposure to application to the skin caused tumours. However, this mechanism is due to repeated cycles of skin damage and restorative hyperplasia. Such a mechanism is considered unlikely in humans, as such long-term skin irritation would not be tolerated. Did not cause mutations in vitro. Inhalation of the vapours showed no effects on reproduction and development in laboratory animals. Inhalation of high concentrations caused respiratory irritation, lung changes and minor reduction of lung function in animals. Not sensitising in animal studies.
NAPHTHALENE: Exposure to high concentrations of naphthalene can cause destruction of red blood cells, anaemia and cataracts. Naphthalene has caused cancer in experiments on laboratory animals; however, the significance of these findings for humans is not certain.

ETHYLBENZENE: Caused cancer in studies in laboratory animals. The significance of these findings for humans is not certain.

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the product, the components of the product and similar products.

12.1. TOXICITY
Product is considered toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

12.2. PERSISTENCE AND DEGRADABILITY

Biodegradability:
Product is considered inherently biodegradable.

Air oxidation:
For the majority of the components, rapid degradation is to be expected in the air.

12.3. BIOACCUMULATIVE POTENTIAL
The majority of the components have a potential for bioaccumulation, but metabolism or physical properties may reduce the bioconcentration or limit the bioavailability.

12.4. MOBILITY IN SOIL
The majority of the components are highly volatile and disperse quickly in the air. There is probably no distribution to the sediment layer and wastewater solids.
The majority of the components have a low potential of migration through the soil.

12.5. RESULTS OF PBT AND vPvB ASSESSMENT
The product is not a PBT or vPvB substance nor does it contain such substances.

12.6. ENDOCRINE DISRUPTING PROPERTIES
The product does not contain components of 0.1% or higher that are considered to have endocrine disrupting properties.

12.7. OTHER ADVERSE EFFECTS
Oil films formed on water may affect oxygen transfer and damage organism.

ENVIRONMENTAL DATA

Ecotoxicity

Test	Duration	Type of organism	Test results
Water – acute toxicity	48h	Daphnia magna	EL50 1 - 100 mg/l: Data for similar materials.
Water – chronic toxicity	72h	Pseudokirchneriella subcapitata	NOELR 1 - 10 mg/l: Data for similar materials.
Water – acute toxicity	72h	Pseudokirchneriella	EL50 1 - 100 mg/l: Data for similar

		subcapitata	materials.
Water – acute toxicity	96h	Oncorhynchus mykiss	LL50 1 - 100 mg/l: Data for similar materials.
Water – chronic toxicity	21 days	Daphnia magna	NOELR 0.48 mg/l: Data for similar materials.

Persistence, degradability and bioaccumulative potential

Medium	Test type	Duration	Test results
Water	Easy biodegradability	28 days	Percent degraded < 60 : similar material

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL GUIDELINES
Do not allow to enter the environment, sewage system or waste water. Residues or waste must be handed over to a recognised disposal centre in compliance with the applicable regulations. See also Waste Ordinance VVEA of 04.12.2015 and the Ordinance on the Movement of Waste VeVA of 22.06.2005.

INFORMATION ON PROPER DISPOSAL

Waste Disposal Code (Annex 1, LVA): 13 07 03 (Other fuels, including mixtures), classification "S" (hazardous waste)

Note: This waste code has been assigned based on the intended use (section 1). Another use may result in a different waste code.

Warning for empty containers: Empty containers may contain residues and be dangerous. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THERE IS A RISK OF EXPLOSION WITH POSSIBLE INJURY OR DEATH. Do not attempt to refill or clean the container. Residues are difficult to remove. Empty casks should be completely emptied, properly capped and returned immediately to a reprocessing facility. All containers must be disposed of in an environmentally safe manner and in accordance with national regulations.

SECTION 14 TRANSPORT INFORMATION

14.1. UN-number

ADN	1863
ADR	1863
RID	1863
IMDG	1863
IATA	1863

14.2. Proper shipping name

ADN	FUEL, AVIATION, TURBINE ENGINE
ADR	FUEL, AVIATION, TURBINE ENGINE
RID	FUEL, AVIATION, TURBINE ENGINE
IMDG	FUEL, AVIATION, TURBINE ENGINE
IATA	FUEL, AVIATION, TURBINE ENGINE

14.3 Transport hazard class

ADN	3
ADR	3
RID	3
IMDG	3
IATA	3

14.4 Packing group

ADN

Packing group	III
Classification Code	F1
Labels	3 (N2, F)
CDNI Inland Water Waste Agreement	NST 3232 Jet Fuel

ADR

Packing group	III
Classification Code	F1
Hazard Identification Number	30
Labels	3

RID

Packing group	III
Classification Code	F1
Hazard Identification Number	30
Labels	3

IMDG

Packing group	III
Labels	3

IATA

Packing group	III
Labels	3

14.5. Environmental hazards:

ADN

Environmentally hazardous	yes

ADR

Environmentally hazardous	yes

RID

Environmentally hazardous	yes

IMDG

Marine pollutant	yes

14.6. Special precautions for users

Refer to section 7.

14.7. Maritime transport in bulk according to IMO instruments

MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15 REGULATORY INFORMATION

LEGAL STATUS AND APPLICABLE LAWS AND REGULATIONS

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS / LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Applicable EC directives and regulations:
1907/2006 [...concerning the registration, evaluation, authorisation and restriction of chemicals...]

850/2004/EU [...on the prohibition and restriction of persistent organic pollutants ...]

96/82/EC extended by 2003/105/EC [… on the control of major-accident hazards involving dangerous substances]. Product contains a substance covered by the criteria set out in Annex I. Further details of the requirements relating to the volume of product to be stored on site can be found in the Directive.

98/24/EC [... on the protection of workers from the risks related to chemical agents at work...] Further details on the requirements can be found in the directive.

1272/2008 [… on classification, labelling and packaging of substances and mixtures ...]

See the relevant EU/national regulation for details of any action(s) or restriction(s) required by the above regulation(s) / directive(s).

National regulations:
No classification of chemical group according to EU CLP Regulation (Annex 5 ChemO).
Waters Protection Ordinance of 28.10.1998 (WPO): Class A, may pollute water in small quantities (Annex 1 of the directive of 01.01.2019 of the KVU).)
Ordinance on Air Pollution Control of 16.12.1985 (OAPC): Use only as fuel for aviation turbine engines
Ordinance on Protection against Major Accidents (MAO) of 27.02.1991 (Status as of 01.08.2019): Quantity threshold 200’000kg, as per Annex 1

15.2. CHEMICAL SAFETY ASSESSMENT

REACH Information: A chemical safety assessment was performed for all substances of this product and for the product itself.

SECTION 16 OTHER INFORMATION

REFERENCES: The following sources of information were used in the preparation of the safety data sheet: Results from in-house toxicology studies or from the supplier, CONCAWE product dossiers, publications from other industry associations such as the European Hydrocarbon Solvent Manufacturers Association, U.S. HPV Program Robust Summaries, EU IUCLID Data Base, U.S. NTP publications and other appropriate sources.

List of abbreviations and acronyms that may be used in this safety data sheet:

Akronym	Full text
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ASTM	American Society for Testing and Materials
CAS	Chemical Abstracts Service
CLP	Classification Packaging and Labelling
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level

DIN	Deutsches Institut für Normung
EC	European Commission
ECHA	European Chemicals Agency
EL	Effective Loading
ELINCS	European List of Notified Chemical Substances
ENCS	Japanese Existing and New Chemical Substances Inventory
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC	Lethal Concentration
LD	Lethal Dose
LL	Lethal Loading
MARPOL	International Convention for the Prevention of Pollution From Ships
NA	Not applicable
NOEC	No Observed Effect Concentration
NOEL	No Observed Effect Level
OEL	Swiss occupational exposure limits
PBT	persistent, bioaccumulative and toxic
REACH	Registration Evaluation And Authorisation Of Chemicals
RID	Regulations Relating to International Carriage of Dangerous Goods by Rail
STEL	Short term exposure limit
SVHC	Candidate List of substances of very high concern
TWA	Time-Weighted Average
UVCB	Substance of unknown or variable composition, complex reaction products or biological materials
VOC	Volatile organic compounds
vPvB	very persistent and very bioaccumulative

Acute Tox	acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Muta.	Germ cell mutagenicity
Repr.	Reproductive toxicity
Skin Corr.	Skin corrosion
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING AMENDMENTS:
Sections 9, 12 and 14 updated

The information contained herein is based on the present state of our knowledge and has been compiled to the best of our knowledge and belief. The information and recommendations are offered for the user's compliance and consideration. It is the responsibility of the user to ensure that the product is suitable for the intended application.

APPENDIX

Section 1 EXPOSURE SCENARIO TITLE	
Title:	
Distribution of substance	
Use descriptor	
Sector(s) of use	SU3, SU8, SU9
Process categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Environmental release categories	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6A, ERC6B, ERC6C, ERC6D, ERC7
Specific environmental release categories	ESVOC 8.3b.v1
Scope of process	
Loading (including sea/inland vessels, rail/road vehicles and IBC loading) and repackaging (including drums and small packages) of the substance including its samples, storage, unloading, distribution and related laboratory activities.	
Section 2 OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1 Control of Worker Exposure	
Product Characteristics	
liquid	
Duration, frequency and quantity	
Covers daily exposures up to 8 hours (unless stated differently) [G2] Includes substance content in the product up to 100% [G13]	
Other Operational Conditions affecting Exposure	
The implementation of an appropriate standard for occupational hygiene is assumed. [G1] Use at no higher than 20°C above ambient temperature is assumed. [G15] No human health exposure assessment has been shown. [G39]	
Contributing scenarios / Specific risk management measures and operating conditions (Controls only required to show listed safe uses)	
General measures (skin irritants) PROC1 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 measures (skin irritants) PROC15** 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 measures (skin irritants) PROC2** 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 measures (skin irritants) PROC3** 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 measures (skin irritants) PROC4

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 measures (skin irritants) PROC8a

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 measures (skin irritants) PROC8b

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 measures (skin irritants) PROC9

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.

Section 2.2 Control of Environmental Exposure

Product Characteristics

Predominantly hydrophobic.
Substance is complex UVCB.

Duration, frequency and quantity

Annual site tonnage (tonnes/year): 11’000
Continuous release.
Emission Days (days/year): 300
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 0.002
Maximum daily site tonnage (kg/day): 36’000
Regional use tonnage (tonnes/year): 5’400’000

Environmental factors not influenced by risk management

Local freshwater dilution factor: [EF1] 10
Local marine water dilution factor: [EF2] 100

Other Operational Conditions affecting Environmental Exposure

Release fraction to air from process (initial release prior to RMM): 0.001
Release fraction to soil from process (initial release prior to RMM): 1.0E-05
Release fraction to wastewater from process (initial release prior to RMM): 1.0E-05

Technical conditions and measures at process level (source) to prevent release

Due to divergent common practices at different locations, conservative estimates are made about release processes.

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

If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.
No wastewater treatment required.
Risk from environmental exposure is driven by freshwater.
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

Organisational measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and Measures related to municipal sewage treatment plant
Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2’000 Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7 Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2’600’000 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7
Conditions and Measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or regional regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or regional regulations. [ERW1]
Section 3 EXPOSURE ESTIMATION
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method (HBM) has been used to calculate environmental exposure with the Petrorisk model. [E22]
Section 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
4.1. Health
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] Risk Management Measures are based on qualitative risk characterisation. [G37] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org). 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. Maximum risk ratio for air emissions [RCRair]: 3.7E-05 Maximum risk ratio for wastewater emissions [RCRwater]: 0.006802 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 EXPOSURE SCENARIO TITLE	
Title:	
Use as a fuel- Industrial	
Use descriptor	
Sector(s) of use	SU3
Process categories	PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b
Environmental release categories	ERC7
Specific environmental release categories	ESVOC SpERC 7.12a.v1
Scope of process	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2 OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1 Control of Worker Exposure	
Product Characteristics	
liquid	
Duration, frequency and quantity	
Covers daily exposures up to 8 hours (unless stated differently) [G2] Includes substance content in the product up to 100% [G13]	
Other Operational Conditions affecting Exposure	
The implementation of an appropriate standard for occupational hygiene is assumed. [G1] Use at no higher than 20°C above ambient temperature is assumed. [G15] No human health exposure assessment has been shown. [G39]	
Contributing scenarios / Specific risk management measures and operating conditions (Controls only required to show listed safe uses)	
General measures (skin irritants) PROC1 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 measures (skin irritants) PROC16** 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 measures (skin irritants) PROC2** 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 measures (skin irritants) PROC3** 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 measures (skin irritants) PROC8a** 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 measures (skin irritants) PROC8b

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.

Section 2.2 Control of Environmental Exposure

Product Characteristics

Predominantly hydrophobic.
Substance is complex UVCB.

Duration, frequency and quantity

Annual site tonnage (tonnes/year): 550’000
Continuous release.
Emission Days (days/year): 300
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 1
Maximum daily site tonnage (kg/day): 1.8E+06
Regional use tonnage (tonnes/year): 550’000

Environmental factors not influenced by risk management

Local freshwater dilution factor: [EF1] 10
Local marine water dilution factor: [EF2] 100

Other Operational Conditions affecting Environmental Exposure

Release fraction to air from process (initial release prior to RMM): 0.005
Release fraction to soil from process (initial release prior to RMM): 0
Release fraction to wastewater from process (initial release prior to RMM): 1.0E-05

Technical conditions and measures at process level (source) to prevent release

Due to divergent common practices at different locations, conservative estimates are made about release processes.

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

If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.
Risk from environmental exposure is driven by freshwater / sediment.
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 >= (%): 84.6

Organisational measures to prevent/limit release from site

Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and Measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2’000
Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 5’300’000
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Conditions and Measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of substance is generated. [ERW3]

Section 3 EXPOSURE ESTIMATION
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method (HBM) has been used to calculate environmental exposure with the Petrorisk model. [E22]
Section 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
4.1. Health
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] Risk Management Measures are based on qualitative risk characterisation. [G37] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
4.2. Environment
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org). 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. Maximum risk ratio for air emissions [RCRair]: 0.000319 Maximum risk ratio for wastewater emissions [RCRwater]: 0.345562 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Section 1 EXPOSURE SCENARIO TITLE	
Title:	
Use as a fuel- Professional	
Use descriptor	
Sector(s) of use	SU22
Process categories	PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b
Environmental release categories	ERC9a, ERC9b
Specific environmental release categories	ESVOC SpERC 9.12b.v1
Scope of process	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2 OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1 Control of Worker Exposure	
Product Characteristics	
liquid	
Duration, frequency and quantity	
Covers daily exposures up to 8 hours (unless stated differently) [G2] Includes substance content in the product up to 100% [G13]	
Other Operational Conditions affecting Exposure	
The implementation of an appropriate standard for occupational hygiene is assumed. [G1] Use at no higher than 20°C above ambient temperature is assumed. [G15] No human health exposure assessment has been shown. [G39]	
Contributing scenarios / Specific risk management measures and operating conditions (Controls only required to show listed safe uses)	
General measures (skin irritants) PROC1 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 measures (skin irritants) PROC16** 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 measures (skin irritants) PROC2** 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 measures (skin irritants) PROC3** 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 measures (skin irritants) PROC8a** 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 measures (skin irritants) PROC8b

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.

Section 2.2 Control of Environmental Exposure

Product Characteristics

Predominantly hydrophobic.
Substance is complex UVCB.

Duration, frequency and quantity

Annual site tonnage (tonnes/year): 2’200
Continuous release.
Emission Days (days/year): 365
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 0.0005
Maximum daily site tonnage (kg/day): 6’100
Regional use tonnage (tonnes/year): 4’400’000

Environmental factors not influenced by risk management

Local freshwater dilution factor: [EF1] 10
Local marine water dilution factor: [EF2] 100

Other Operational Conditions affecting Environmental Exposure

Release fraction to air from wide dispersive use (regional only): 1.0E-05
Release fraction to soil from wide dispersive use (regional only): 1.0E-05
Release fraction to wastewater from wide dispersive use: 0.001

Technical conditions and measures at process level (source) to prevent release

Due to divergent common practices at different locations, conservative estimates are made about release processes.

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

If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.
No wastewater treatment required.
Risk from environmental exposure is driven by freshwater.
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 >= (%): 0

Organisational measures to prevent/limit release from site

Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and Measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2’000
Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 690’000
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Conditions and Measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of substance is generated. [ERW3]

Section 3 EXPOSURE ESTIMATION
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method (HBM) has been used to calculate environmental exposure with the Petrorisk model. [E22]
Section 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
4.1. Health
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4.2. Environment
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org). 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. Maximum risk ratio for air emissions [RCRair]: 3.3E-05 Maximum risk ratio for wastewater emissions [RCRwater]: 0.007893 Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.