Ministry of Defence HSIS Safety Data Sheet

NSN	NSC	Country Code*	NIIN*
9130992201036	9130	99	2201036

Supply Description	
SDS Version	4
Item Name	Turbine Fuel Aviation
Kit Reference	
Other Description	SAV2102 (UN 1863)
Commercial Name/Product No*	Jet A-1 FSII
Additional Product ID	
SDS Date	
Manufacturers SDS Reference	V4 DTD 11 11 2014
Supplier	Air BP Ltd
Address	Chertsey Road Sunbury On Thames Middlesex
Post Code	TW16 7BP
Suppliers Business Telephone Number	0 1865 407333
Emergency Tel No	0044 0 1865 407333
IPT	
REACH Reference Number	
NCage	K0851
Status Comment	Class 3 UN 1863

Other Information	
Other Information	
Chemical Content	Kerosine (petroleum),sweetened 0-100% Kerosine (petroleum hydrodesulfurised 0-100% Kerosine (petroleum) 0-100% 2-(2-methoxyethoxy)ethanol <0.5%
Related SDS	

SAFETY DATA SHEET

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

1.1 Product identifier

Product name **Jet A-1 (FSII + Lubricity Improver Additive)**

Other means of identification Aviation Kerosine, Aviation Turbine Fuel, ATK, F-34, JP-8 Turbine Fuel, AVTUR/FSII, Aviation Kerosine Type: Containing Fuel System Icing Inhibitor

Proper shipping name MARPOL Annex 1 rules apply for bulk shipments by sea.
Category: Kerosene

SDS no. SAV2102 (UN 1863)

Product type Liquid.

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

Identified uses
Use as a fuel - Consumer
Use as a fuel - Industrial
Use as a fuel - Professional
Formulation and (re)packing of substances and mixtures
Use of substance as functional fluids

Use of the substance/ mixture Jet fuel, do not use for other purposes.
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

1.3 Details of the supplier of the safety data sheet

Supplier BP Oil UK Limited
Chertsey Road
Sunbury On Thames
Middlesex, TW16 7BP
United Kingdom

E-mail address MSDSadvice@bp.com

1.4 Emergency telephone number

EMERGENCY TELEPHONE NUMBER Carechem + 44 (0) 1865 407333 (24 hours)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition Mixture

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

Flam. Liq. 3, H226
Skin Irrit. 2, H315
STOT SE 3, H336 (Narcotic effects)
Asp. Tox. 1, H304
Aquatic Chronic 2, H411

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification R10
Xn; R65
Xi; R38
N; R51/53

Physical/chemical hazards Flammable.

Human health hazards Harmful: may cause lung damage if swallowed. Irritating to skin.

Environmental hazards Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

See Section 16 for the full text of the R phrases or H statements declared above.

SECTION 2: Hazards identification

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

Hazard pictograms

Signal word Danger

Hazard statements

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

Precautionary statements

Prevention

P280 - Wear protective gloves. Wear eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.
P273 - Avoid release to the environment.

Response

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

Storage Not applicable.

Disposal P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients Kerosene

Supplemental label elements Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings Yes, applicable.

Tactile warning of danger Yes, applicable.

SECTION 3: Composition/information on ingredients

Substance/mixture Mixture

A mixture of kerosine streams. May also contain small quantities of proprietary performance additives. Contains small amounts of diethyleneglycol monomethyl ether (DEGME, 2-(2-methoxyethoxy)ethanol) as a fuel icing inhibitor. May Contain Tracer A (LDTA-A).

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
Kerosine (petroleum), sweetened	REACH #: 01-2119502385-46 EC: 294-799-5 CAS: 91770-15-9 Index: 649-427-00-X	0 - 100	R10 Xn; R65 Xi; R38 N; R51/53	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 (Narcotic effects) Asp. Tox. 1, H304 Aquatic Chronic 2, H411	[1]
Kerosine (petroleum), hydrodesulfurised	REACH #: 01-2119462828-25 EC: 265-184-9 CAS: 64742-81-0 Index: 649-423-00-8	0 - 100	R10 Xn; R65 Xi; R38 N; R51/53	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 (Narcotic effects) Asp. Tox. 1, H304 Aquatic Chronic 2, H411	[1] [2]

[1] [2]

SECTION 3: Composition/information on ingredients

Kerosine (petroleum)	REACH #: 01-2119485517-27 EC: 232-366-4 CAS: 8008-20-6 Index: 649-404-00-4	0 - 100	R10 Xn; R65 Xi; R38 N; R51/53	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 (Narcotic effects) Asp. Tox. 1, H304 Aquatic Chronic 2, H411	
2-(2-methoxyethoxy) ethanol	EC: 203-906-6 CAS: 111-77-3 Index: 603-107-00-6	<0.5	Repr. Cat. 3; R63	Repr. 2, H361d (Unborn child)	[1] [2]

See Section 16 for the full text of the R-phrases declared above.

See Section 16 for the full text of the H statements declared above.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
[5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.

Inhalation

If inhaled, remove to fresh air. Get medical attention.

If exposure to vapour, mists or fumes causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If any symptoms persist obtain medical advice.

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Protection of first-aiders

No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

Treatment should in general be symptomatic and directed to relieving any effects.
Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment.
Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided.
Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media

Do not use water jet.

5.2 Special hazards arising from the substance or mixture

SECTION 5: Firefighting measures

Hazards from the substance or mixture

Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Liquid will float and may reignite on surface of water.

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

5.3 Advice for firefighters

Special precautions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Eliminate all ignition sources. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment.

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.
Product less dense than water: In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents.
If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means.
The use of dispersants should be advised by an expert, and, if required, approved by local authorities.

6.3 Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

SECTION 6: Accidental release measures

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment. Do not swallow. Aspiration hazard Can enter lungs and cause damage. Never siphon by mouth. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid contact of spilt material and runoff with soil and surface waterways. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Do not reuse container. Empty containers retain product residue and can be hazardous.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Keep away from heat and direct sunlight. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store and use only in equipment/containers designed for use with this product. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Not suitable

Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.

7.3 Specific end use(s)

Recommendations

See section 1.2 and Exposure scenarios in annex, if applicable.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values

SECTION 8: Exposure controls/personal protection

Kerosine (petroleum), hydrodesulfurised	**ACGIH TLV (United States). Absorbed through skin.** TWA: 200 mg/m³, (as total hydrocarbon vapor) 8 hours. Issued/Revised: 1/2003
Kerosine (petroleum)	**ACGIH TLV (United States). Absorbed through skin.** TWA: 200 mg/m³, (as total hydrocarbon vapor) 8 hours. Issued/Revised: 1/2003
2-(2-methoxyethoxy)ethanol	**EH40/2005 WELs (United Kingdom (UK)). Absorbed through skin.** TWA: 50.1 mg/m³ 8 hours. Issued/Revised: 10/2007 TWA: 10 ppm 8 hours. Issued/Revised: 10/2007

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived No Effect Level

Product/ingredient name	Type	Exposure	Value	Population	Effects
Kerosene	DNEL	Long term Oral 24 hours TWA	19 mg/kg bw/day	Consumers	Systemic

Predicted No Effect Concentration

No PNECs available

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards. The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection

If local exhaust ventilation or other methods of ventilation are not possible or are insufficient, wear suitable respiratory protective devices. Wear suitable respiratory protective devices if there is a risk of exposure limits being exceeded. The choice of suitable respiratory device will depend upon a risk assessment of the workplace environment and the task being carried out. If required, the respiratory device must be certified as safe in defined explosive atmospheres (EX Label). Respiratory protective devices must be checked to ensure they fit correctly each time they are worn. Please consult European standard EN 529 for further guidance on the selection, use, care and maintenance of respiratory protective devices.

Suitable breathing apparatus (independent of ambient atmosphere) must be worn if any of the following situations apply.
- When the workplace atmosphere is considered to be immediately dangerous to life and health.
- When there is a risk of the workplace atmosphere being oxygen deficient.
- When the workplace atmosphere is uncontrolled.
- When the workplace atmosphere is unknown.
- When there is a risk of loss of consciousness or asphyxiation
- When entry into a confined space is required.

SECTION 8: Exposure controls/personal protection

- When there is a risk of gases being released that could be a fire or explosion hazard.
- When the concentration of contaminants in the atmosphere exceeds the level of protection (maximum allowed concentration) given by a filtering device
- When the contaminants have a low odour that would not be tasted or smelt by the wearer of a filtering device if the filter became exhausted or saturated.
- When there is a risk of hydrogen sulphide exposure limits being exceeded.

Use with adequate ventilation.
If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.

Recommended: Gas filter suitable for gases and vapours. Filter type: A.
Combined filter suitable for gases, vapours and particles (dust, smoke, mist, aerosol). Filter type: AP.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

General Information:

Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. The correct choice of protective gloves depends upon the chemicals being handled, and the conditions of work and use. Most gloves provide protection for only a limited time before they must be discarded and replaced (even the best chemically resistant gloves will break down after repeated chemical exposures).

Gloves should be chosen in consultation with the supplier / manufacturer and taking account of a full assessment of the working conditions.

Wear chemical resistant gloves.
Do not re-use gloves.
Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis.
Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture).
The frequency of replacement will depend upon the circumstances of use.

Breakthrough time:

Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are taken into account. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.
Our recommendations on the selection of gloves are as follows:

Continuous contact:

Gloves with a minimum breakthrough time of 240 minutes, or >480 minutes if suitable gloves can be obtained.
If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to.

Short-term / splash protection:

Recommended breakthrough times as above.
It is recognised that for short-term, transient exposures, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Glove Thickness:

For general applications, we recommend gloves with a thickness typically greater than 0.35 mm.

It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based

SECTION 8: Exposure controls/personal protection

on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.

Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:

• Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.

• Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Recommended: Nitrile gloves.

Skin and body

Wear suitable protective clothing.
Footwear highly resistant to chemicals.
When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.
Refer to standard: ISO 11612
When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.
Refer to standard: EN 1149
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination.
When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required.
Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	Liquid.
Colour	Clear
Odour	Hydrocarbon.
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	140 to 280°C (284 to 536°F)
Flash point	Closed cup: >=38°C (>=100.4°F) [Pensky-Martens.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	775 to 840 kg/m³ (0.775 to 0.84 g/cm³) at 15°C
Solubility(ies)	Very slightly soluble in water.
Partition coefficient: n-octanol/water	Not available.

SECTION 9: Physical and chemical properties

Auto-ignition temperature	>220°C (>428°F)
Decomposition temperature	Not available.
Viscosity	Kinematic: 1 to 8 mm^2/s (1 to 8 cSt) at -20°C
Explosive properties	Not available.
Oxidising properties	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity — No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability — The product is stable.

10.3 Possibility of hazardous reactions — Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.

10.4 Conditions to avoid — Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.

10.5 Incompatible materials — Reactive or incompatible with the following materials: oxidising materials.

10.6 Hazardous decomposition products — Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result / Route	Test authority / Number		Species	Dose	Exposure	Remarks
Kerosene	LC50 Inhalation Vapour	Equivalent to OECD	403	Rat	>5.28 mg/l Mortality and Systemic Effects	4 hours	Based on Straight run kerosine
	LD50 Dermal	EPA	798. 1100	Rabbit	>2000 mg/kg Mortality and Systemic Effects	-	Based on Thermocracked kerosine
	LD50 Oral	EPA	798. 1175	Rat	>5000 mg/kg	-	Based on Thermocracked kerosine
2-(2-methoxyethoxy) ethanol	LD50 Dermal	-	-	Rabbit	6540 mg/kg	-	-

Acute toxicity estimates

Route	ATE value
Not available.	

Irritation/Corrosion

Product/ingredient name	Test authority / Test number		Species	Route / Result	Test concentration	Remarks
Kerosene	OECD	404	Rabbit	Skin - Non-irritant to skin.	100 %	Based on Kerosine
	EPA	-	Rabbit	Skin - Irritation	100%	Based on Heating Oil.
	EPA	798-4500	Rabbit	Eyes - Non-irritating to the	100%	Based on Thermocracked

SECTION 11: Toxicological information

				eyes.		kerosine

Sensitiser

Product/ingredient name	Route	Test authority / Test number		Species	Result	Remarks
Kerosene	skin	EPA	798. 4100	Guinea pig	Not sensitising	Based on Thermocracked kerosine

GERM CELL MUTAGENICITY

Product/ingredient name	Test authority / Test number	Cell		Type	Result	Remarks
Kerosene	Equivalent to OECD 476	-	Experiment: In vitro	Subject: Mammal - species unspecified	Negative	Based on Hydrosulphurised Kerosine
	Equivalent to OECD 476	-	Experiment: In vitro	Subject: Mammal - species unspecified	Negative	Based on Hydrosulphurised Kerosine
	Equivalent to OECD 471	-	Experiment: In vitro	Subject: Non-mammalian species	Negative	Based on Hydrosulphurised Kerosine
	Equivalent to OECD 475	Cell: Germ	Experiment: In vivo	Subject: Unspecified	Negative	Based on Straight run kerosine
	Equivalent to OECD 478	Cell: Germ	Experiment: In vivo	Subject: Unspecified	Negative	Based on Straight run kerosine

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

Carcinogenicity

Product/ingredient name	Test authority / Test number		Species	Route	Exposure	Result	Remarks
Kerosene	Equivalent to OECD	451	Mouse	Dermal	2 years	Positive	Based on Jet Fuel
	Equivalent to OECD	451	Mouse	Dermal	2 years	Negative	Based on Hydrotreated Kerosine

Conclusion/Summary Based on available data, the classification criteria are not met. Mechanistic understanding suggests tumors observed in animal models are not relevant to man.

Reproductive toxicity

Product/ingredient name	Test authority / Test number		Species	Route	Exposure	Developmental	Maternal toxicity	Fertility	Remarks
Kerosene	Equivalent to OECD	421	Rat	Dermal	34 days	-	-	Negative	Based on Hydrosulphurised Kerosine
	not guideline	-	Rat	Oral	90 days	-	-	Negative	Based on Jet Fuel
	Equivalent to OECD	414	Rat	Oral	10 days	Negative	-	-	Based on Jet Fuel
	Equivalent to OECD	414	Rat	Inhalation	10 days	Negative	-	-	Based on Kerosine

Conclusion/Summary Development: Based on available data, the classification criteria are not met.
Fertility: Based on available data, the classification criteria are not met.
Effects on or via lactation: Based on available data, the classification criteria are not met.

Specific target organ toxicity

SECTION 11: Toxicological information

Product / Ingredient Name	Hazard	Test authority / Test number	Species	Route	Type	Dose	Exposure	Target organs	Remarks
Kerosene	STOT - RE	Equivalent to OECD 410	Rat	Dermal	NOAEL	>200 mg/kg bw/day	4 weeks	-	Based on Straight run kerosine
	STOT - RE	not guideline -	Rat	Oral	NOAEL	>100 mg/kg bw/day	90 days	-	Based on Jet Fuel
	STOT - RE	Equivalent to OECD 412	Rat	Inhalation	NOAEC	>1 mg/l/6h	90 days	Central Nervous System (CNS)	Based on Jet Fuel

Conclusion/Summary STOT - RE: Based on available data, the classification criteria are not met.
STOT - SE: May cause drowsiness or dizziness. Target Organs: Central Nervous System (CNS)

Information on the likely routes of exposure Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Inhalation Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Ingestion Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Skin contact Causes skin irritation.

Eye contact No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Ingestion Adverse symptoms may include the following:
nausea or vomiting

Skin contact Adverse symptoms may include the following:
irritation
redness

Eye contact Adverse symptoms may include the following:
pain or irritation
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Inhalation May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Ingestion If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.

Potential chronic health effects

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Test authority / Test number		Species	Type / Result	Exposure	Effects	Remarks
Kerosene	OECD	201	Algae	EL50 1 to 3 mg/l Nominal Fresh water	72 hours	cell number	Based on Solvent naphtha (petroleum), heavy aromatic
	OECD	-	Micro-organism	LL50 677.9 mg/l Nominal Fresh water	72 hours	growth inhibition	Based on Kerosine
	OECD	201	Algae	LOEL 1 mg/l Nominal Fresh water	72 hours	cell number	Based on Solvent naphtha (petroleum), heavy aromatic
	OECD	201	Algae	NOEL 1 mg/l Nominal Fresh water	24 hours	cell number	Based on Solvent naphtha (petroleum), heavy aromatic
	OECD	201	Algae	NOEL 1 mg/l Nominal Fresh water	48 hours	cell number	Based on Solvent naphtha (petroleum), heavy aromatic
	Modelled data	-	Micro-organism	NOEL 1.641 mg/l Nominal Fresh water	72 hours	growth inhibition	Based on Kerosine
	OECD	202	Daphnia	Acute EL50 1.4 mg/l Nominal Fresh water	48 hours	Mobility	Based on Kerosine (petroleum), hydrodesulfurised
	OECD	203	Fish	Acute LL50 2 to 5 mg/l Fresh water	96 hours	Mortality	Based on Heavy aromatic solvent naphtha
	OECD	202	Daphnia	Acute NOEL 0.3 mg/l Nominal Fresh water	48 hours	Mobility	Based on Kerosine (petroleum), hydrodesulfurised
	OECD	203	Fish	Acute NOEL 2 mg/l Fresh water	96 hours	Mortality	Based on Solvent naphtha (petroleum), heavy aromatic
	Equivalent to OECD	211	Daphnia	Chronic EL50 0.89 mg/l Fresh water	21 days	Reproduction	Based on Kerosine (petroleum), hydrodesulfurised
	Equivalent to OECD	211	Daphnia	Chronic EL50 0.81 mg/l Fresh water	21 days	Immobilisation	Based on Kerosine (petroleum), hydrodesulfurised

SECTION 12: Ecological information

	Equivalent to OECD	211	Daphnia	Chronic LOEL 1.2 mg/l Fresh water	21 days	Reproduction	Based on Kerosine (petroleum), hydrodesulfurised
	Equivalent to OECD	211	Daphnia	Chronic LOEL 0.48 mg/l Fresh water	21 days	Adult Length	Based on Kerosine (petroleum), hydrodesulfurised
	Equivalent to OECD	211	Daphnia	Chronic NOEL 0.48 mg/l Fresh water	21 days	Reproduction	Based on Kerosine (petroleum), hydrodesulfurised
	Equivalent to OECD	211	Daphnia	Chronic NOEL 1.2 mg/l Fresh water	21 days	Adult Length	Based on Kerosine (petroleum), hydrodesulfurised
	Modelled data	-	Fish	Chronic NOEL 0.098 mg/l Nominal Fresh water	28 days	Mortality	Based on Kerosine

Conclusion/Summary Non-persistent per IMO criteria

Environmental hazards Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Inherently biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2-(2-methoxyethoxy)ethanol	-	-	Readily

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
2-(2-methoxyethoxy)ethanol	-0.47	0.18	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

12.5 Results of PBT and vPvB assessment

PBT Not applicable.

vPvB Not applicable.

12.6 Other adverse effects

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Hazardous waste Yes.

European waste catalogue (EWC)

SECTION 13: Disposal considerations

Waste code	Waste designation
13 07 03*	other fuels (including mixtures)

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

Packaging

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Special precautions This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Other information Empty packages may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1863	UN1863	UN1863	UN1863
14.2 UN proper shipping name	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE. Marine pollutant	Fuel, aviation, turbine engine
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Hazard identification number** 30 **Tunnel code** D/E	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Remarks** Table C Danger: 3+N2+F	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules (EmS)** F-E, S-E	The environmentally hazardous substance mark may appear if required by other transportation regulations.

14.6 Special precautions for user Not available.

UK Emergency Action Code: 3Y

ADR/RID Classification code: F1

ADN Classification code: F1

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Proper shipping name MARPOL Annex 1 rules apply for bulk shipments by sea. Category: Kerosene

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Not applicable.

Other regulations

REACH Status	The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.
United States inventory (TSCA 8b)	Not determined.
Australia inventory (AICS)	Not determined.
Canada inventory	Not determined.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	Not determined.
Philippines inventory (PICCS)	Not determined.

15.2 Chemical Safety Assessment	This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DPD = Dangerous Preparations Directive [1999/45/EC]
DSD = Dangerous Substances Directive [67/548/EEC]
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure

SECTION 16: Other information

TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336 (Narcotic effects)	May cause drowsiness or dizziness. (Narcotic effects)
H361d (Unborn child)	Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

Aquatic Chronic 2, H411	LONG-TERM AQUATIC HAZARD - Category 2
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Flam. Liq. 3, H226	FLAMMABLE LIQUIDS - Category 3
Repr. 2, H361d (Unborn child)	TOXIC TO REPRODUCTION (Unborn child) - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT SE 3, H336 (Narcotic effects)	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

Full text of abbreviated R phrases

R10- Flammable.
R63- Possible risk of harm to the unborn child.
R65- Harmful: may cause lung damage if swallowed.
R38- Irritating to skin.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD]

Repr. Cat. 3 - Toxic to reproduction category 3
Xn - Harmful
Xi - Irritant
N - Dangerous for the environment

History

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Prepared by	Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

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Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition	Mixture
Code	SAV2102 (UN 1863)
Product name	Jet A-1 (FSII + Lubricity Improver Additive)

Section 1: Title

Short title of the exposure scenario	Use of Kerosine as a fuel - Consumer
List of use descriptors	**Identified use name:** Use as a fuel - Consumer **Sector of end use:** SU21 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b **Market sector by type of chemical product:** PC13 **Specific Environmental Release Category:** ESVOC SpERC 9.12c.v1
Processes and activities covered by the exposure scenario	Covers consumer uses in liquid fuels.
Assessment Method	See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1: Control of consumer exposure

Concentration of substance in mixture or article	Covers concentrations up to 100%
Physical state:	Liquid, vapour pressure 0.5 - 10 kPa at STP
Amounts used:	Covers use up to 50000g Covers skin contact area up to 420 cm2
Frequency and duration of use:	Covers use up to 0.143 times per day Covers exposure up to 2 hours per event
Other given operational conditions affecting consumers exposure:	Covers use at ambient temperatures. Covers use in room size of 20m³ Covers use under typical household ventilation.

Contributing scenarios: Operational conditions and risk management measures

Product category(ies) 13: Fuels Liquid: automotive refuelling
Operations Conditions (consumer): Covers concentrations up to 100% Covers use up to 52 days per year Covers use up to 1 time/on day of use Covers skin contact area up to 210.00cm2 For each use event, covers use amounts up to 50000g Covers outdoor use. Covers use in room size of 100 m³ Covers exposure up to 0.05 hours per event
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product category(ies) 13: Fuels Liquid: home space heater fuel
Operations Conditions (consumer): Covers concentrations up to 100% Covers use up to 365 days per year Covers use up to 1 time/on day of use Covers skin contact area up to 210.00 cm2 For each use event, covers use amounts up to 1500 g Covers use under typical household ventilation. Covers use in room size of 20 m³ Covers exposure up to 0.03 hours per event
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product category(ies) 13: Fuels Liquid: garden equipment - use
Covers concentrations up to 100% Covers use up to 26 days per year Covers use up to 1 time/on day of use For each use event, covers use amounts up to 1000 g Covers outdoor use. Covers use in room size of 100 m³ Covers exposure up to 2.00 hours per event
Risk management measures (RMM): No specific risk management measure identified beyond those operational conditions stated.

Product category(ies) 13: Fuels Liquid: garden equipment - refuelling
Operations Conditions (consumer): Covers concentrations up to 100% Covers use up to 26 days per year Covers use up to 1 time/on day of use Covers skin contact area up to 420.00 cm2 For each use event, covers use amounts up to 1000 g Covers use in a one car garage (34 m³) under typical ventilation. Covers use in room size of 34 m³ Covers exposure up to 0.03 hours per event
Risk management measures (RMM): No specific risk management measure identified beyond those operational

conditions stated.

Section 2.2: Control of environmental exposure

Product characteristics:	Substance is complex UVCB. Predominantly hydrophobic
Fraction of EU tonnage used in region	0.1
Regional use tonnage	1.8E5
Fraction of Regional tonnage used locally	0.0005
Maximum daily site tonnage	245
Frequency and duration of use:	Continuous release
Conditions and measures related to municipal sewage treatment plant:	Risk from environmental exposure is driven by freshwater.
Conditions and measures related to external treatment of waste for disposal:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste:	This substance is consumed during use and no waste from the substance is generated.
RCR - Air Compartment Driven:	7.49E-5
RCR - Water Compartment Driven:	6.92E-3

Section 3 Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment: 1:	
Exposure assessment (environment):	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Exposure estimation	Not available.

Exposure estimation and reference to its source - Consumers: 0:	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.
Exposure estimation	Not available.

Section 4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet.
Health	Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	Mixture
Code	SAV2102 (UN 1863)
Product name	Jet A-1 (FSII + Lubricity Improver Additive)

Section 1: Title

Short title of the exposure scenario	Formulation & (Re)packing of Kerosine - Industrial
List of use descriptors	**Identified use name:** Formulation and (re)packing of substances and mixtures **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC14, PROC15 **Sector of end use:** SU03, SU10 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC02 **Specific Environmental Release Category:** ESVOC SpERC 2.2.v1
Processes and activities covered by the exposure scenario	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Assessment Method	See Section 3

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product characteristics:

Physical state:	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of substance in product:	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:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid all skin contact with product, clean up contamination/spills as soon as they occur.
Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately.
Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General exposures (closed systems) No other specific measures identified.

General exposures (open systems): No other specific measures identified.

Process sampling: No other specific measures identified.

Laboratory activities: No other specific measures identified.

Bulk transfers: No other specific measures identified.

Mixing operations (open systems): No other specific measures identified.

Manual Transfer from/pouring from containers: No other specific measures identified.

Drum/batch transfers: No other specific measures identified.

Tabletting, compression, extrusion or pelletisation: No other specific measures identified.

Drum and small package filling: No other specific measures identified.

Equipment cleaning and maintenance: No other specific measures identified.

Bulk product storage: No other specific measures identified.

Section 2.2: Control of environmental exposure

Product characteristics:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used:	
Fraction of EU tonnage used in region	0.1
Regional use tonnage	5.2E6
Fraction of Regional tonnage used locally	5.8E-3
Annual site tonnage	3.0E4
Maximum daily site tonnage	1.0E5
Frequency and duration of use:	Continuous release
Emission Days (days/year)	300
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process (initial release prior to RMM)	1.0E-2
Release fraction to soil from process (initial release prior to RMM)	0.0001
Release fraction to wastewater from process (initial release prior to RMM)	2.0E-4
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Treat air emission to provide a typical removal efficiency of	0
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of	86.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater 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:	
Estimated substance removal from wastewater via on-site sewage treatment	94.7
Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs	94.7
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal	2.6E5
Assumed on-site sewage treatment plant flow	2000 (m3/d)
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
RCR - Air Compartment Driven:	5.47E-03
RCR - Water Compartment Driven:	3.80E-01

Section 3: Exposure estimation

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/ offsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.
Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	Mixture
Code	SAV2102 (UN 1863)
Product name	Jet A-1 (FSII + Lubricity Improver Additive)

Section 1: Title

Short title of the exposure scenario	Use of Kerosine as a fuel - Industrial
List of use descriptors	**Identified use name:** Use as a fuel - Industrial **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC16 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC07 **Specific Environmental Release Category:** ESVOC SpERC 7.12a.v1
Processes and activities covered by the exposure scenario	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Assessment Method	See Section 3

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product characteristics:

Physical state:	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of substance in product:	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:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid all skin contact with product, clean up contamination/spills as soon as they occur.
Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately.
Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General exposures (closed systems): No other specific measures identified.

Use as a fuel 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.

Section 2.2: Control of environmental exposure

Product characteristics:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used:	
Fraction of EU tonnage used in region	0.1
Regional use tonnage	5.5E5
Fraction of Regional tonnage used locally	1
Annual site tonnage	5.5E5
Maximum daily site tonnage	1.8E6
Frequency and duration of use:	Continuous release
Emission Days (days/year)	300
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process (initial release prior to RMM)	5.0E-3
Release fraction to soil from process (initial release prior to RMM)	0
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
Treat air emission to provide a typical removal efficiency of	95
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of	84.6
If discharging to domestic sewage treatment plant, provide the required onsite wastewater 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:	
Estimated substance removal from wastewater via on-site sewage treatment	94.7
Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs	94.7
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal	5.3E6
Assumed on-site sewage treatment plant flow	2000 (m3/d)
Conditions and measures related to external treatment of waste for disposal:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste:	This substance is consumed during use and no waste from the substance is generated.
RCR - Air Compartment Driven:	2.50E-03
RCR - Water Compartment Driven:	3.46E-01

Section 3: Exposure estimation

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/ offsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.
Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition	Mixture
Code	SAV2102 (UN 1863)
Product name	Jet A-1 (FSII + Lubricity Improver Additive)

Section 1: Title

Short title of the exposure scenario	Use of Kerosine as a fuel - Professional
List of use descriptors	**Identified use name:** Use as a fuel - Professional **Process Category:** PROC01, PROC02, PROC03, PROC08a, PROC08b, PROC16 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC09a, ERC09b **Specific Environmental Release Category:** ESVOC SpERC 9.12b.v1
Processes and activities covered by the exposure scenario	Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Assessment Method	See Section 3

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product characteristics:

Physical state:	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of substance in product:	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:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid all skin contact with product, clean up contamination/spills as soon as they occur.
Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately.
Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General exposures (closed systems): No other specific measures identified.

Use as a fuel 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.

Section 2.2: Control of environmental exposure

Product characteristics:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used:	
Fraction of EU tonnage used in region	0.1
Regional use tonnage	4.4E6
Fraction of Regional tonnage used locally	5.0E-4
Annual site tonnage	2.2E3
Maximum daily site tonnage	6.1E3
Frequency and duration of use:	Continuous release
Emission Days (days/year)	365
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process (initial release prior to RMM)	1.0E-3
Release fraction to soil from process (initial release prior to RMM)	0.00001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Risk from environmental exposure is driven by freshwater. No wastewater treatment required.
Treat air emission to provide a typical removal efficiency of	Not applicable.
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of	0
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:	
Estimated substance removal from wastewater via on-site sewage treatment	94.7
Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs	94.7
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal	6.9E5
Assumed on-site sewage treatment plant flow	2000 (m3/d)
Conditions and measures related to external treatment of waste for disposal:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.
Conditions and measures related to external recovery of waste:	This substance is consumed during use and no waste from the substance is generated.
RCR - Air Compartment Driven:	1.17E-03
RCR - Water Compartment Driven:	7.89E-03

Section 3: Exposure estimation

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/ offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.
Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	Mixture
Code	SAV2102 (UN 1863)
Product name	Jet A-1 (FSII + Lubricity Improver Additive)

Section 1: Title

Short title of the exposure scenario	Use of Kerosine as functional fluids - Industrial
List of use descriptors	**Identified use name:** Use of substance as functional fluids **Process Category:** PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC07 **Specific Environmental Release Category:** ESVOC SpERC 7.13a.v1
Processes and activities covered by the exposure scenario	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Assessment Method	See Section 3

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product characteristics:

Physical state:	Liquid, vapour pressure 0.5 - 10 kPa at STP
Concentration of substance in product:	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:	Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures (skin irritants): Avoid all skin contact with product, clean up contamination/spills as soon as they occur.
Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately.
Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Bulk transfers: No other specific measures identified.

Drum/batch transfers: No other specific measures identified.

Filling of articles/equipment closed systems: No other specific measures identified.

Filling/preparation of equipment from drums or containers: No other specific measures identified.

General exposures (closed systems): No other specific measures identified.

General exposures (open systems): No other specific measures identified.

Remanufacture of reject articles: No other specific measures identified.

Equipment maintenance: No other specific measures identified.

Storage: No other specific measures identified.

Section 2.2: Control of environmental exposure

Product characteristics:	Substance is complex UVCB. Predominantly hydrophobic
Amounts used:	
Fraction of EU tonnage used in region	0.1
Regional use tonnage	550
Fraction of Regional tonnage used locally	0.018
Annual site tonnage	10
Maximum daily site tonnage	500
Frequency and duration of use:	Continuous release
Emission Days (days/year)	20
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process (initial release prior to RMM)	5.0E-3
Release fraction to soil from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	3.0E-5
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Risk from environmental exposure is driven by freshwater. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required.
Treat air emission to provide a typical removal efficiency of	0
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of	0
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:	
Estimated substance removal from wastewater via on-site sewage treatment	94.7
Total efficiency of removal from wastewater after on-site and off-site (domestic treatment plant) RMMs	94.7
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal	6.3E4
Assumed on-site sewage treatment plant flow	2000 (m3/d)
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
RCR - Air Compartment Driven:	7.25E-05
RCR - Water Compartment Driven:	7.13E-03

Section 3: Exposure estimation

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/ offsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.
Health	Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk management measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.