MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

PRODUCT NAME

AVIATION KEROSENE

SYNONYMS: Regular Burning Oil (RBO), 28 second Heating Oil, Aviation Jet Fuel A-1 (civilian), Avtur, NATO F34, F35 (military)

NAME AND ADDRESS OF MANUFACTURER/SUPPLIER

ConocoPhillips Ltd, Humber Refinery, South Killingholme, North Lincolnshire DN40 3DW.
Telephone No. 01469 571571
Facsimile No. 01469 555143

EMERGENCY CONTACT

ConocoPhillips Ltd, Humber Refinery, South Killingholme, Immingham, North Lincolnshire DN40 3DW.
Health and Safety Emergency Telephone No. 01469 555348 (24 hours)

APPLICATION

Aviation turbine fuel and heating oil.
As an undosed petroleum distillate, kerosene is intended for use as a fuel only. Any other use implies a processing operation which may change its essential characteristics and liability for the safety of the product will transfer to the processor. When supplied as Avtur, it is intended for use as an aviation fuel only.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Petroleum hydrocarbons (saturated olefinic and aromatics C_9 - C_{16}) >99%
CAS No. 64742-81-0 EINECS No. 865-184-9 RIO, 38, 65.

Additives :

1.	Static dissipator additive	up to 3 mg/litre
2.	Anti-oxidant (alkylated phenols)	17-24 mg/litre
3.	May contain Fuel system icing inhibitor	0.10-0.15 vol % Diethylene Glycol Monomethyl Ether (DiEGME)
4.	May also contain a marker (coumarin)	2 mg/litre

3. HAZARDS IDENTIFICATION

Health Hazards:
This product contains a distillate which when undiluted has been shown in experimental animal studies to be a weak skin carcinogen. The risk of skin cancer will be very low, providing the handling precautions are such that prolonged and repeated skin contact is avoided and good personal hygiene is observed.

PRODUCT NAME

AVIATION KEROSENE

3. HAZARDS IDENTIFICATION (CONT.)

Safety Hazards:
Product is flammable. Keep away from flames, sparks and other sources of ignition when not in use. Electrostatic charges may be generated during liquid transfer.

Environmental Hazards:
Dangerous for the environment. Expected to be toxic to fish and aquatic invertebrates (LL50 typically 1 – 10 mg/l).

4. FIRST AID MEASURES

Eyes : Rinse immediately with plenty of water until irritation subsides. If irritation persists, obtain medical attention.

Skin : Immediate flush with large amounts of water, using soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, get medical attention.

Inhalation : In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

Ingestion : DO NOT INDUCE VOMITING, since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

Pressure Injection : ALWAYS OBTAIN IMMEDIATE MEDICAL ATTENTION EVEN THOUGH THE INJURY MAY APPEAR MINOR.

5. FIRE-FIGHTING MEASURES

Extinguishing Media : Foam, dry chemical powder, carbon dioxide.

Fire and Explosion Hazards : Flammable, moderate hazard. Liquid can release vapour, which forms flammable mixtures at or above the flash point. Static discharge; material can accumulate static charges which may cause an incendiary electrical discharge.

Special Fire-Fighting Procedures : Water fog or spray to cool fire exposed surfaces (e.g. containers) and to protect personnel. Should only be used by personnel trained in fire-fighting. Cut off "fuel"; depending on circumstances, either allow the fire to burn out under controlled conditions or use foam or dry chemical powder to extinguish the fire. Respiratory and eye protection required for fire-fighting personnel exposed to fumes or smoke.

Hazardous Combustion Products : Smoke and carbon monoxide in the event of incomplete combustion.

6 ACCIDENTAL RELEASE MEASURES

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Personal Precautions : See Section 8.

Environmental Precautions :

Land Spill : Eliminate sources of ignition. Shut off source taking normal safety precautions. Prevent liquid from entering sewers, water courses or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation. Take measures to minimise the effects of groundwater

Water Spill : Eliminate sources of ignition and warn other shipping to stay clear. Notify port and other relevant authorities. Do not confine in area of leakage. Remove from the surface by skimming or with suitable absorbents. Disperse the residue in unconfined waters, if permitted by local authorities and environmental agencies.

Decontamination Procedures :
Recover by skimming or pumping using explosion-proof equipment, or contain spilled liquid with booms, sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of absorbed residues as directed in Section 13.

7. HANDLING AND STORAGE

The design and operation of bulk storage and fuel systems must comply with national legislation and recognised codes of good practice. In similar quantities, containers such as drums should be stored in cool, well ventilated surroundings, away from all sources of ignition. Electrical equipment and fittings must comply with local fire prevention regulations for this class of flammable product.

Load/unload temperature : Ambient to 40°C **Storage temperature** : Ambient to 40°C

Special Precautions
Ensure compliance with statutory requirements for storage and handling. Use the correct grounding procedure. Store and handle in closed or properly vented containers. Prevent small spills and leakages to avoid slip hazard.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Limit :

Substance	8-hour TWA	STEL	Source / Other Information
No applicable UK standards	-	-	HSE Workplace Exposure Limits (EH40).

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Engineering measures : Use only explosion proof electrical equipment if ventilation is used to reduce atmospheric levels.

Personal Protection : In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and nitrile chemically impervious gloves (EN374). Where only incidental contact is likely, wear safety glasses with side shields (EN166). No other special precautions are necessary provided skin/eye contact is avoided. Where concentrations in air may be excessive approved respirators fitted with appropriate cartridges suitable for organic vapours may be required (EN 405).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Clear liquid	**Odour** :	Mild paraffinic
Specific Gravity at 15°C :	0.775-0.820	**pH** :	Not applicable
Vapour Pressure at 20°C kpa :	3.0	**Vapour Density (air=1)** :	< 1
Boiling point, °C :	150-300°C (typically)	**Pour Point, °C** :	-24°C
Flash Point (ASTM D 56), °C :	38min	**Auto-ignition Temperature, °C** :	250°C

Flammability Limit, in Air, % by Volume : **LEL** : 0.5 **UEL** : 6.0

Kinematic Viscosity at 20°C, mm^2s^{-1} : 2.0

Solubility : negligible at 20°C

PLEASE NOTE THAT THESE PROPERTIES DO NOT CONSTITUTE A SPECIFICATION.

10. STABILITY AND REACTIVITY

Stability : The product is stable and not subject to polymerisation.

Conditions to avoid : Avoid exposure to extreme heat, heat sources, open flames and other sources of ignition.

Materials to avoid : Avoid contact with strong oxidising agents such as liquid chlorine.

Hazardous Decomposition Products : Product does not decompose at ambient temperature.

11. TOXICOLOGICAL INFORMATION

HEALTH EFFECTS

Eyes : Slightly irritating but does not damage eye tissue.

Skin : Low order of acute toxicity. Irritating. Prolonged or repeated contact may also lead to dermatitis .

Inhalation : Negligible hazard at ambient/normal handling temperatures. In high concentrations and/or at elevated temperatures, vapour or mist is irritating to mucous membranes, may cause headaches and dizziness, may be anaesthetic and may cause other central nervous system effects. Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs. Avoid breathing vapours, mists or fumes.

Ingestion : Low order of acute/systemic toxicity.

Chronic :

Lifetime skin painting tests indicate that materials of similar composition have produced skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

Acute : Based upon animal test data from similar materials and products, the acute toxicity of this product is expected to be :

ORAL	(rat)	LD50	> 5000 mg/kg	(slightly toxic)
INHALATION	(rat)	LC50	> 2500 mg/m^3	(slightly toxic)
DERMAL	(rabbit)	LD50	> 2000 mg/kg	(moderately toxic)

12. ECOLOGICAL INFORMATION

Kerosines released to water will form a film of hydrocarbons floating on the surface. Water solubility of kerosines is extremely low. Some evaporation will occur, and higher molecular weight hydrocarbons may be absorbed on sediment.

Ecotoxicity: Dangerous for the environment. Acutely toxic to fish and aquatic invertebrates.

Mobility: Some mobility in soils

Persistence and Degradability : Inherently bio-degradable by micro-organisms. Biodegradation in water is a minor loss process. Hydrocarbon constituents of kerosine react with hydroxyl radicals in the atmosphere to give half lives of less than a day.

Bioaccumulation Potential: Kerosines have the potential to bioaccumulate, although metabolic processes may reduce the level of bioconcentration achieved.

13. DISPOSAL CONSIDERATIONS

The product contains hazardous ingredients listed in Section 2. Collect and dispose of it at an authorised disposal facility, in conformance with national and local; regulations and in accordance with EEC Directives on hazardous waste.

14. TRANSPORT INFORMATION

Classification for Transport : Railcars, tank trucks, cylinders (Special storage equipment)

Shipping Name : Kerosene

UN Number :	1223	**Packaging Group** :	III
UN Class :	Class 3	**IMO/IMDG** :	Class 3
ADR/RID :	Class 3	**ICAO/IATA** :	Class 3

Emergency Action Code : 3Y

15. REGULATORY INFORMATION

Hazard Label Data : F Xn - Harmful Xi – Irritant N – Dangerous for the environment

R & S Phrases :

R10	Flammable
R51/53	Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment
R65	Harmful: May cause lung damage if swallowed
S2	Keep out of reach of children
S23	Do not breathe vapours
S24	Avoid contact with skin
S61	Avoid releases to the environment (see Sections 12 & 6)
S62	If swallowed DO NOT INDUCE VOMITING, seek medical attention showing label or container

EC Directives : EC Directive 91 / 155 / EEC

Waste Oil Directive 87 / 101/ EEC

Statutory Information : The Health and Safety at Work Act 1974

Consumer Protection Act 1987

Environmental Protection Act 1990

Control of Substances Hazardous to Health Regulations 2002 (as amended)

Chemicals (Hazard Information and Packaging for Supply) Regulations 2002

Dangerous Substances and Explosive Atmospheres Regulations 2002

16. OTHER INFORMATION

The data and advice given apply when the product is sold for the stated application or applications. The product is not sold as suitable for any other application. Use of the product for applications other than as stated in this sheet may give rise to risks not mentioned in this Sheet. You should not use the product other than for the stated application or applications.

If you have purchased the product for supply to a third party for use at work, it is your duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet.

If you are an employer, it is your duty to tell your employees and others or may be affected of any hazards described in this sheet and of any precautions which should be taken.

This data sheet has been revised in sections 1, 8 and 15