

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product Name:	Aviation Kerosene
Synonyms:	Aviation Jet Fuel A-1 (civilian) Avtur NATO F34, F35 (military) Regular Burning Oil (RBO) 28 Second Heating Oil
Safety Data Sheet Number:	814650
Intended Use:	Aviation Turbine Fuel
Manufacturer:	ConocoPhillips Ltd, Humber Refinery South Killingholme, North Lincolnshire DN40 3DW
Emergency Health and Safety Number:	+44 (0)1469 555348 (24 Hours)
MSDS Information:	Internet: http://w3.conocophillips.com/NetMSDS/ Email: MSDS@conocophillips.com

2. Hazards Identification

This material is dangerous according to regulatory guidelines.

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

Physical Hazards: Flammable liquid and vapor.

Health Hazards: Causes skin irritation. May be fatal if swallowed and enters airways.

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

3. Composition / Information on Ingredients

Component	CASRN	EINECS	Concentration*	Symbols/Risk Phrases**
Hydrodesulfurized Kerosene ..C9-16	64742-81-0	265-184-9	100	Xn;R65
Naphthalene	91-20-3	202-049-5	<1	Carc.Cat.3;R40 Xn;R22 N;R50-53

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

** As currently entered in Annex I of the Dangerous Substance Directive (67/548/EEC)

4. First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

5. Fire-Fighting Measures

Unusual Fire & Explosion Hazards: Flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Cool equipment exposed to fire with water, if it can be done safely.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

Personal Precautions: Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons and shipping down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents).

7. Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Use only non-sparking tools. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes for specific bonding/grounding requirements). Do not enter confined spaces such as tanks or pits without following proper entry procedures. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to appropriate guidance pertaining to cleaning, repairing, welding, or other contemplated operations. Outdoor or detached storage is preferred. Indoor storage should meet Country or Committee standards and appropriate fire codes.

8. Exposure Controls / Personal Protection

Occupational Exposure Limits

Component	UK-EH40	US-ACGIH	Other
Hydrodesulfurized Kerosene ..C9-16		TWA: 200 mg/m ³ Skin	
Naphthalene		STEL: 15 ppm TWA: 10 ppm Skin	TWA: 0.2 mg/m ³ (as total of 17 PNA's measured by NIOSH Method 5506) (ConocoPhillips Guidelines)

STEL = Short Term Exposure Limit (15 minutes); TWA = Time Weighted Average (8 hours)

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds EN 166 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit an approved air purifying respirator equipped with Type A, organic gases and vapour filters (as specified by the manufacturer) may be used.

A respiratory protection program that follows recommendations for the selection, use, care and maintenance of respiratory protective devices in EN 529:2005 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

Data represent typical values and are not intended to be specifications.

Appearance:	Clear
Physical Form:	Liquid
Odour:	Kerosene
Odour Threshold:	N/D
pH:	N/A
Melting/Freezing Point:	N/D<-47°C
Pour Point:	<-47°C
Boiling Point/Range:	150-300°C
Flash Point:	> 38°C (ASTM D56)
Flammability:	Flammable
Evaporation Rate (nBuAc=1):	N/D
Vapour Pressure:	3.0 kPa @20°C
Relative Vapour Density (air=1):	>1

Relative Density (water=1):	0.775-0.820 @ 15°C
Viscosity:	1.3-2.9 mm ² /s @ 20°C
Solubility:	Solubility in water: Negligible @20°C
Partition Coefficient (n-octanol/water) (Kow):	N/D
LEL (vol % in air):	0.5
UEL (vol % in air):	6.0
Autoignition Temperature:	250°C
Decomposition Temperature:	N/D

10. Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Exposure Route	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful		> 5 mg/L
Ingestion (Swallowing)	Unlikely to be harmful	Aspiration Hazard - May be fatal if swallowed and enters airways.	>5 g/kg
Skin Absorption	Unlikely to be harmful		> 2 g/kg

Irritation	Hazard	Additional Information
Skin Contact	Causes skin irritation	Repeated exposure may cause skin dryness or cracking.
Eye Contact	Causes mild eye irritation.	

Signs and Symptoms: While significant vapor concentrations are not likely, high concentrations can cause minor respiratory irritation, headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Ingestion can cause irritation of the digestive tract, nausea, diarrhea, and vomiting.

Sensitization	Hazard	Additional Information
Skin	Not known to be a skin sensitizer	
Respiratory:	No information available	

Target Organ Toxicity	Hazard	Additional Information
Single Exposure:	Not expected to cause organ effects from single exposure.	
Repeated Exposure:	Not classified (based on information from similar materials)	In an epidemiology study comparing 30 exposed and 60 unexposed workers, those exposed to jet fuel (average 300 mg/m ³ , average employment 17 years) did not perform as well in some psychological and motor skills tests.

C/M/R	Hazard	Additional Information
Carcinogenicity	Not classified (based on information from similar materials)	Cancer mortality and morbidity were followed in a cohort of 2182 men exposed to jet fuel in the Swedish Armed Forces. No increase in the frequency of total neoplasms or cancers at specific sites was seen, even when the duration of employment, latency, occupation, or type of exposure were considered. IARC has concluded that there is inadequate evidence for the carcinogenicity of jet fuel in both animals and humans.
Germ Cell Mutagenicity	Inadequate information available	
Reproductive Toxicity	Not classified (based on information from similar materials).	Skin application in female rats at 494, 330, or 165 mg/kg daily for 7 consecutive weeks (pre mating, mating, and gestation), or for 8 consecutive weeks in males did not result in systemic, reproductive, or developmental toxicity. A rat study using topical hydrodesulfurized kerosene, a similar material, at up to 494 mg/kg/d did not identify an increase in developmental toxicity or male or female reproductive toxicity.

12. Ecological Information

Ecotoxicity: Experimental studies on a range of similar distillates show that acute aquatic toxicity values are in the range 1-100 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. Should be regarded as toxic to aquatic organisms - may cause long term adverse effects in the aquatic environment.

Mobility: On release to water, hydrocarbons will float on the surface and since they are sparingly soluble, the only significant loss is volatilization to air. It is possible that some of the higher molecular weight hydrocarbons will be adsorbed on sediment. Biodegradation in water is a minor loss process. In air, these hydrocarbons are photodegraded by reaction with hydroxyl radicals with half lives varying from 0.1 to 0.7 days.

Persistence and degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material are between 3.3 and 6 and above and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

European Waste Code: 13 07 03* other fuels (including mixtures)

This material, if discarded as produced, would be considered as hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and it's contaminants in order to assign the proper waste disposal code.

Disposal Recommendations: Disposal must be in accordance with Directive 2006/12/EC and other applicable national or regional provisions, and based upon material characteristics at time of disposal. For incineration of waste, follow Directive 2000/76/EC. For landfill of waste, follow Directive 1999/31/EC. Product is suitable for burning in an enclosed controlled burner for fuel value if >5000 BTU, or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Follow Directive 2000/76/EC.

Empty Containers: Container contents should be completely used and containers emptied prior to discard. Empty drums should be properly sealed and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with applicable regulations.

14. Transportation Information

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Unless otherwise noted the transportation information given covers the following regulations:
IMDG (Water), ADR (Road), RID (Rail), ICAO/IATA (Air).

UN-No.: UN1863
Proper Shipping Name: FUEL, AVIATION, TURBINE ENGINE
Hazard Class: 3
Packing Group: III
Marine Pollutant: Yes
Emergency Action Code: 3Y
Hazard Identification Number: 30

15. Regulatory Information

Material hazards have been evaluated in accordance with the EU Dangerous Substances/Preparations Directives.

Labeling Information:

Symbol

Xn: Harmful

N: Dangerous for the Environment



Nature of Risk

R10 - Flammable.

R38 - Irritating to skin.

R65 - Harmful: may cause lung damage if swallowed.

R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Advice

S 2 - Keep out of the reach of children.

S23 - Do not breathe vapor.

S62 - If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Export Rating:

NLR (No License Required)

16. Other Information

References used in compiling safety data sheet information:

EC 1272/2008

EN166:2002 Eye Protection

EN 529:2005 Respiratory Protective devices

BS EN 374-1:2003 Protective gloves against chemicals and micro-organisms

Workplace Exposure Limits, EH40/2005, Control of Substances Hazardous to Health

Directive 91/689/EEC on hazardous waste (European Waste Codes)

Directive 2000/76/EC on incineration of waste

Directive 1999/31/EC on landfill of waste

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Final

Revised Sections or Basis for Revision:

Replaces Humber MSDS for Aviation Kerosene dated January 2006 .

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Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; BMGV = Biological Monitoring Guidance Value; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization / International Air Transport Association; IMDG = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; N/A = Not Applicable; N/D = Not Determined; NTP = [US] National Toxicology Program; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value; TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 Workplace Exposure Limits

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