



1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : Dual Purpose Kerosene

Other names : Kerosene, Illuminating Kerosene, Dual Purpose Kerosene, DPK, Jet Fuel, Jet A1.

Product Use : Industrial and domestic fuel and for power station gas for turbine engines.

Company : Kenya Petroleum Refineries Ltd,
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Mombasa, KENYA.

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2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Hydrocarbons mixture	Mixture	99 - 100 %
Antioxidant additive	Mixture	0.0025 %
Antistatic additive	Mixture	0.0003 %

3. HAZARDS IDENTIFICATION

Appearance and Odor: Clear liquid with hydrocarbon odour

Health Hazards:

Acute: May cause skin irritation. Mildly irritating to the eye. May cause lung damage if swallowed. Do not induce vomiting. May cause somnolence and narcosis on prolonged exposure. May cause CNS depression.

Chronic: Prolonged and repeated skin contact may cause dermatitis due to defatting effect.

Inhalation:

In applications where vapors (caused by high temperature) or mists (caused by mixing or spraying) are created, breathing may cause a mild burning sensation in the nose, throat and lungs. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

May cause slight irritation of the eyes. If irritation occurs, a temporary burning sensation, minor redness, swelling, and/or blurred vision may result.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration



(breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

4. FIRST AID MEASURES

- Inhalation** : Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
- Skin Contact** : Remove contaminated clothing. Wipe off excess material from exposed area. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- Eye Contact** : Flush eyes with plenty of water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision or swelling occurs, transport to nearest medical facility for additional treatment.
- Ingestion** : DO NOT induce vomiting. DO NOT take internally. In general no treatment is necessary unless large quantities are swallowed. However, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
- First aid facilities** Eye wash fountains and safety showers should be available for emergency use
- Advise to Doctor** Treat symptomatically.
If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

- Fire hazards** : CAUTION! Product is flammable!
Isolate from sources of heat, naked flames, sparks and oxidizing materials. Take precautions against discharges of static electricity. Earth and bond all process equipment including tanks and drums. Ensure ventilation is adequate to prevent build up of explosive atmosphere.
- Extinguishing Media** : Material will float and can be re-ignited on surface of water.



Use water fog, 'alcohol foam', dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water.

Additional Advice : Clear fire area of all non-emergency personnel. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure, Self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water to prevent weakening of container structure.

6. ACCIDENTAL RELEASE MEASURES

Protective measures : CAUTION! . Combustible.
Eliminate all potential sources of ignition. Keep away from heat, naked flames and sparks. Stop leak if safe to do so. Handling equipment must be bonded and grounded to prevent sparking. Wear appropriate personal protective equipment. Contain residual material at affected sites to prevent material from entering sewers; ditches and waterways

Clean Up Methods : For large liquid spills, transfer by mechanical means such as vacuum trucks to a salvage tank. Do not flush away residues with water; retain as contaminated waste. Soak up residue with appropriate absorbent material, sand or earth. Remove contaminated soil and dispose safely.
For small spills, remove with a vacuum truck or pump to storage /salvage vessels

Additional Advice : Maritime spillages should be dealt with using Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex1 Regulation 26.

7. HANDLING AND STORAGE

General Precautions : CAUTION! Combustible. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Store in a well ventilated area. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Handling : Surfaces that are sufficiently hot may ignite liquid material.

Storage : Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use



explosion-proof ventilation indoors and in laboratory settings.

Container Advice : Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits (OELs)

Material	Source	Type	ppm	mg/m3	Notation
Kerosene, as total hydrocarbon vapour	ACGIH TLV	TWA		200	
Kerosene, as total hydrocarbon vapour	OSHA PEL	TWA	100 ppmv		
Kerosene, as total hydrocarbon vapour	ACGIH	Notations			Skin; A3

Engineering controls : Provide adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation recommended. Install eye washes and showers for emergency use.

Protective Clothing : Avoid contact with the skin and the eyes, and avoid breathing vapours or mists. Chemical resistant gloves/gauntlets, boots, and apron. For spillage clean up use chemical resistant knee length boots. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood,

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level adequate to protect the worker's health, an approved respirator must be worn. Types to be considered include supplied air respirator, air purifying respirator for organic vapors, and self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

Hand Protection : Materials should provide suitable chemical protection: PVC, Neoprene or nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, and dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

Eye Protection : Chemical splash goggles and face shield

Skin Protection : Use skin protection which is chemically resistant to this



material. Gloves, boots, suits and other items should preferably be Neoprene or Nitrile Rubber.

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odour : Clear and bright liquid with hydrocarbon odour
Flash point : Approx 40 °C (38 °C min)
Boiling point : IBP : 150 °C; FBP : 300 °C
Vapour pressure : 6 kPa @ 40 °C
Specific gravity (Water =1) : 0.78 @ 20 °C
Water solubility : Negligible.
Flammability limits : LEL : 1.0 % v/v; UEL : 6.0 % v/v
Auto ignition temperature : 220 -300 °C
Vapour density (air =1) : > 5 @ 15 °C

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions of use.
Conditions to Avoid : Heat and naked flames
Materials to Avoid : Strong oxidizing agents.
Hazardous Decomposition Products : Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependant on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other unidentified organic compounds will be evolved when this material undergoes combustion or pyrolysis.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Test	Result	OSHA Classification	Material Tested
Dermal LD50	> 2 g/kg (Rabbit)	Non-toxic	Based on components (s)
Eye Irritation	2.0 [Rabbit, 1 hour]	Non-irritating	Based on components (s)
Oral LD 50	> 5 kg/kg (Rat)	Non-toxic	Based on components (s)
Skin Irritation	5.5 [Rabbit]	Irritating	Based on components (s)

Carcinogenicity Classification

Carcinogenicity : Long-term skin painting of kerosene and related materials caused malignant skin tumors with long latency periods (appearing late in the animals lives) in mice. Mechanistic studies suggest that these tumors are a secondary effect related to prolonged skin injury and irritation. A two-year inhalation study in rats found that



	naphthalene caused tumors in the lining of the nose (olfactory epithelial neuroblastoma) and respiratory tract (respiratory epithelial adenoma) of both male and female animals.
Eye	Naphthalene can cause the formation of lens opacities (cataracts). Case reports suggest that oral, dermal and inhalation exposure may cause similar effects in humans. However, large-scale studies in exposed workers have failed to confirm this.
Genotoxicity	The vast majority of genotoxicity tests conducted on kerosene and related petroleum streams have not indicated genetic toxicity or mutagenicity. However, a few exceptions have been reported. One kerosene-like material was found to be mutagenic in the L5178Y mouse lymphoma assay with metabolic activation (a test-tube procedure) and to cause chromosome damage in the in vivo (live animal) rat cytogenetics assay. Jet Fuel A was reported to produce chromosome damage in at least one rat study.
Blood Organisms	Hemolytic anemia is the most frequent manifestation of naphthalene exposure in humans with secondary effects reported including jaundice, neurological damage, and respiratory difficulty
Kidney	Nephropathy (kidney damage) caused by kerosene inhalation appears to be male rat specific (accumulation of alpha-2-u globulin) and is probably not relevant to humans. Renal toxicity has been reported in case studies of humans who ingested naphthalene.
Liver	Tissue damage was observed in some organs of rabbits following repeated skin exposure to related petroleum materials. Microscopic changes seen in the liver (mottled necrosis and centrilobular degeneration), kidney and bladder (hyperplasia) were considered to be secondary to (caused by) the severe skin Irritancy.
Skin	Prolonged and repeated high level dermal (skin) exposure to a middle-distillate material in rabbits results in severe irritation and histopathologic (microscopic tissue changes) including inflammatory cell infiltration, acanthosis (thickening), fibrosis, hyperkeratosis (hardening) and scab formation. All changes appear to be related to chronic irritation.

12. ECOLOGICAL INFORMATION

No ecological data is available for this product

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. Contain spill with sand or earth or absorb with absorbent material. Place used absorbent in



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Date Issued: 31st October, 2007

Local Legislation : suitable sealed containers for disposal.
: Disposal in Kenya should be in accordance with the
Environmental Management and Coordination (Waste Management) Regulations, 2006.

14. TRANSPORT INFORMATION

Identification number	UN 1223
Proper shipping name	Kerosene
DG Class / Division	3 (Flammable Liquid)
Hazchem code	3 [Y]
Packing Group	III

15. REGULATORY INFORMATION

Reference is made to the Kenyan *Factories & Other Place of Work (Hazardous Substances) Regulations, 2007*. Other regulations may apply to this material.

16. OTHER INFORMATION

Risk Statement:

R10 Flammable
R38 Irritating to skin
R65 Harmful: may cause lung damage if swallowed

Safety statement:

S16 Keep away from sources of ignition – no smoking
S2 Keep out of reach of children
S24 Avoid contact with skin
S29 Do not empty in drains
S33 Take precautionary measures against static charges
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection
S43 In case of fire, use foam, dry chemical or CO2
S51 Use only in well ventilated area
S53 void exposure
S62 If swallowed, do not induce vomiting, seek medical advise immediately and show this MSDS.

Hazard Category:

Irritant, Harmful

NFPA Rating (Health, Fire, Reactivity) : 2, 2, 0

MSDS Revisions : None.

MSDS Regulation : The contents in the MSDS are in fulfillment of reporting



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requirements of the *Factories & Other Place of Work (Hazardous Substances) Regulations, 2007*.

Disclaimer:

The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.