



1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : Fuel Oil 180
Other names : Residual Fuel Oil, Boiler Fuel.
Product Use : Fuel

Company : **Kenya Petroleum Refineries Ltd,**
PO Box 90401 – 80100,
Mombasa, KENYA.

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2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Residual Fuel Oil	68553-00-4	100 %

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance and Odor: Dark viscous fluid with hydrocarbon odour.

Routes of exposure: Inhalation, ingestion, skin absorption and skin or eye contact

Health Hazards:

Acute: May cause skin irritation. Slightly irritating to the eye. May cause lung damage if swallowed. Do not induce vomiting. May cause aspiration pneumonitis.

Chronic: Prolonged and repeated contact may cause various forms of dermatitis including folliculitis and oil acne.

Hazards

Combustible liquid. Irritating to the skin. May cause cancer. May produce genetic damage. Inhalation of oil dust or vapors may cause irritation of the upper respiratory tract. Hydrogen sulphide (H₂S) may arise from excessive heating, agitation or from contact with acids or salts. Inhaled H₂S may cause central nervous system depression resulting into a headache, dizziness, nausea, unconsciousness and death. Supplied air respiratory protection must be worn if the H₂S airborne concentration exceeds 20 ppm. The liquid when accidentally aspirated into the lungs can cause severe inflammation of the lung.

Skin Contact:

May be irritating to the skin, but not predicted to be a skin sensitizer. Release during high pressure usage may result in injection of oil into the skin causing local necrosis. Contact with a hot product may result in thermal burns.



Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in nausea and vomiting. If vomiting occurs, product may be aspirated into lungs leading to chemical pneumonitis.

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:

Flush contaminated skin 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. If thermal burns occur, flush contaminated skin with large amounts of water for at least 15 minutes. Carefully remove the clothing. If clothing is stuck to a burn area, do not pull it off but cut around it and cover burn area with a clean cloth. If material is injected under the skin, get medical attention promptly to prevent serious damage; do not wait for symptoms to develop.

Eye Contact:

Flush eyes with plenty of water for at least 15 minutes 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. If thermal burns occur, flush eyes immediately with large volumes of cold water; obtain medical attention immediately.

Ingestion:

DO NOT induce vomiting, get medical advice. Have victim rinse mouth out with water, and then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

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, but care should be taken to prevent aspiration.



5. FIRE FIGHTING MEASURES

Fire hazards

CAUTION! Product is Combustible.

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. Vapors are heavier than air and may "travel" to low level area e.g. sumps, drains, etc and flashback along the vapor trail.

Hazardous Combustion Products

Under fire conditions of this product, a complex mixture of airborne solid, Liquid and gases will evolve when this material undergoes pyrolysis or combustion. CO₂, CO, oxides of sulphur and dense smoke are produced on combustion. H₂S may be released if the product is heated, particularly in the presence of water.

Extinguishing Media

Use water fog, 'alcohol foam', dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use water except as a fog. 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, pipelines 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! Product is combustible.

Eliminate all potential sources of ignition. Keep away from heat, naked flames, sparks and strong oxidising agents. Stop leak if safe to do so. Use explosion proof ventilation indoors and in laboratory settings. Handling equipment must be bonded and grounded to prevent sparking. Wear appropriate personal protective equipment (and breathing apparatus, if applicable).

Clean Up Methods

Contain residual material at affected sites to prevent material from entering sewers; ditches and waterways. Dike and contain land spills; contain water spills by booming.

For large liquid spills, contain the spills with earth or sand and take up by mechanical means such as vacuum trucks to a salvage tank. Do not flush away residues with water; retain as contaminated waste. For small spills, place inert non-combustible absorbent, sand or earth to soak up residue. Remove contaminated soil and dispose safely.

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, clothing and foodstuffs. Wash thoroughly after handling. Launder contaminated clothing prior to use; use good personal hygiene.

Handling

Surfaces that are sufficiently hot may ignite liquid material, even in the absence of sparks or flames. Avoid prolonged exposure to mists, vapors or fumes from hot material. If the product is heated (especially in the presence of water), hydrogen sulphide may be released. Minimise skin contact.

Storage

Keep product away from ignition sources such as heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors has dissipated. Store in a cool, dry and well ventilated area.

Container Advice

Keep containers closed when not in use. 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

Chemical	Limit	TWA	STEL	Ceiling	Notation
Diesel fuel as total hydrocarbon	ACGIH TLV	100 mg/m ³			
Hydrogen Sulfide	ACGIH TLV	10 ppm	15 ppm		

Engineering controls

Use explosion proof ventilation as required to control vapor concentrations. At elevated temperatures, mists or vapor may be generated and exhaust ventilation should be provided to control airborne concentrations below the exposure guidelines/limits. Make-up air should always be supplied to balance exhausted air. For personnel into confined spaces (eg bulk storage tanks), a proper confined space entry procedure must be followed, including ventilation and testing of tank atmosphere. Install eye washes and showers for emergency use.

Protective Clothing :

Avoid contact with the skin and the eyes, and avoid breathing vapors or mists. Use 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 buttoned at neck and wrist, with an integral hood, PVC.



Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level adequate to protect the worker's health, an approved cartridge respirator with a replaceable organic vapor filter 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: impervious 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/or full face shield to protect eyes and face or safety glasses with side shields if contact is likely. Provide an eye station in the area.

Skin Protection

Chemically resistant impervious gloves, boots, suits and other items should preferably be viton, Neoprene or Nitrile Rubber to be used. Safety showers should be available for use.

Work/Hygiene Practices

If contamination occurs, change clothing and discard internally contaminated gloves and footwear. Launder contaminated clothing before reuse. Ensure a high level of personal hygiene is maintained. Always wash hands before eating, drinking, smoking or using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odour	: Dark colored viscous fluid with hydrocarbon odour.
Flash point	: 66 °C minimum.
Boiling point	: Not available.
Pour Point	: 24 °C maximum.
Viscosity	: 180 cst maximum @ 50 °C
Vapour pressure	: Not available
Specific gravity (Water =1)	: 0.920-0.950 @ 20 °C. 0.985 maximum.
Water solubility	: Insoluble
Other Solvents (solubility)	Hydrocarbon solvents
Flammability limits	: LEL : 0.5 % v/v; UEL : 5.0 % v/v
Auto ignition temperature	: 250 °C Approx
Vapour density (air =1)	: Not available
Stability	Stable



10. STABILITY AND REACTIVITY

- Stability** : Chemically stable under normal conditions of use.
Conditions to Avoid : Heat, formation of vapors and naked flames. Sensitive to static discharge
Materials to Avoid : Strong oxidizing agents. Contact with acids or acid salts will give rise to hydrogen sulfide gas.

Hazardous Decomposition Products

Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependant on conditions.

11. TOXICOLOGICAL INFORMATION

- Carcinogenicity and Mutagenicity** : According to the International Agency for Research and Cancer (IARC), this product is considered to be possibly carcinogenic to humans. It may contain a variety of Polycyclic Aromatic Hydrocarbons (PAH), some of which are associated with the potential of inducing skin cancer. A component of the product has produced mutagenic effects.
- Irritancy** : This product is expected to be irritating to the skin, but is not expected to be a skin sensitizer. Contact with hot product may result in thermal burns. Release during high pressure may result in injection of oil into the skin causing local necrosis
- Chronic effects** : Prolonged or repeated contact may cause various forms of dermatitis, including folliculitis and oil acne. Prolonged or repeated contact of polycyclic aromatic hydrocarbons (PAH) with skin may cause skin cancer where poor hygiene may be a contributing factor.
Pre-existing eye, skin and respiratory disorders may be aggravated by this product.

12. ECOLOGICAL INFORMATION

- Environmental Effects:** : May cause physical fouling of aquatic organisms.
Biodegradability : Not readily biodegradable. Potential for bioaccumulation.



13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Waste management priorities (depending on the volumes and concentrations of waste) are:
1. Recover or recycle (process) if possible. Contain spill with sand or earth or absorb with absorbent material. Place used absorbent in suitable sealed containers for disposal.
 2. Energy recovery (cement kilns, thermal power generation)
 3. incineration
 4. Bioremediation in a controlled sludge farm
 5. Disposal at a licensed waste facility
- Local Legislation** : Disposal in Kenya should be in accordance with the *Environmental Management and Coordination (Waste Management) Regulations, 2006*.

14. TRANSPORT INFORMATION

Not dangerous for transport under IMO and IATA/ICAO regulations.
Proper shipping name : FUEL OIL
UN Number: 1268
UN Class: 3
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:

R38 Irritating to skin
R45 May cause cancer
R46 May produce genetic damage

Safety statement:

S16 Eliminate all sources of ignition
S24 Avoid contact with skin
S29 Do not empty in drains
S33 Take precautionary measures against static charges
S36/37 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 Avoid exposure
S62 If swallowed, do not induce vomiting, seek medical advice immediately and show the this container or label



Hazard Category:

Harmful

- MSDS Revisions** : 1: 27/10/09 – To review transport information.
2: 21/05/10 - To review transport information.
- MSDS Regulation** : The contents in the MSDS are in fulfillment of the 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.