

# SAFETY DATA SHEET

## RESIDUAL FUEL OIL



In case of Emergency phone **031 459 5300**  
Email: [MarkD@ffs.co.za](mailto:MarkD@ffs.co.za)  
Emergency Contact Person: Mark de Souza  
Mobile: 083 676 0528

**Classification**  
Hazardous . Flammable Liquid Category 3&4

Revision Number: 10  
Date of Issue: 9 January 2014

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** RESIDUAL FUEL OIL

**Other Names** Heavy Fuel Oil (HFO), Fuel Oil 150 (FO150), Heavy Furnace Fuel (HFF), Fuel Oil 180 (FO180)

**Chemical Nature:** Mixture of Hydrocarbons (C10-C50)

**Recommended Use:** Fuel for boilers, industrial furnaces and other combustion equipment.

**Restrictions on Use:** This product should not be used in applications other than those recommended without first seeking the advice of the supplier.

**Company Information:** FFS Refiners (Pty) Ltd, PO Box 25102, Rosburgh, 4072  
Tel: 031 459 5300, Fax: 031 459 5326, email: [ffs@ffs.co.za](mailto:ffs@ffs.co.za)  
Emergency Contact (24 hours): Mark de Souza (mobile 083 676 0528)

### 2. HAZARD IDENTIFICATION

**GHS Classification:** Flammable Liquid, Category 3 & 4

**Hazard Statements:**

**Physical:** H 226 - Flammable Liquid and Vapour.

**Health:** H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H320 - Causes eye irritation.  
H332 - Harmful if inhaled.  
H335 - May cause respiratory irritation.  
H336 - May cause drowsiness or dizziness.  
H350 - Possible carcinogen.  
H373 - Prolonged/ repeated exposure may cause damage to organs.

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**Environmental:** H410 - Very toxic to aquatic life with long lasting effects.

### Precautionary Statements:

**Prevention:**

- P202 - Do not handle until all safety precautions have been read and understood.
- P210 - Keep away from heat, sparks, open flames and hot surfaces . no smoking.
- P240 - Ground/Bond container or receiving equipment.
- P260 - Do not breathe dust/ fumes/ gas/ mist/ vapours/ spray.
- P262 - Do not allow contact with eyes, skin or clothing.
- P264 - Wash hands thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P273 - Avoid release to the environment.
- P281 - Use personal protective equipment (PPE) as required.
- P285 . In the case of inadequate ventilation, wear respiratory protection.

**Response:**

- P301+P315 - If swallowed, immediately get medical advice/attention.
- P302+P362 - If on skin, take off contaminated clothing and wash before re-use.
- P303+P314+P350 - If on skin or hair, gently wash with plenty of soap and water; get medical advice if you feel unwell.
- P304+P340 - If inhaled, move to fresh air and keep at rest in a position comfortable for breathing.
- P305+P338+P351 - If in eyes, rinse cautiously with water for several minutes, remove contact lenses if present and if easy to do.

**Disposal:** P501 - Dispose of waste product to landfill site (see Section 13).

**Storage:** P50 - Store in accordance with national regulations and standards (SANS 10031, SANS 10089).

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

**Description:** Complex mixture of liquid hydrocarbons: contains iso- and normal paraffins, olefins and aromatics. Sulphur content ranges to a maximum of 5% by volume.

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### Ingredients:

| Ingredient Name   | CAS Number | w/w % |
|-------------------|------------|-------|
| Residual Fuel Oil | 68476-33-5 | 100%  |

## 4. FIRST AID MEASURES

- Eye Contact:** Flush eyes thoroughly with water and remove contact lenses, if any. Seek medical attention if discomfort persists.
- Skin Contact:** Remove contaminated clothing and shoes. Flush contaminated skin with water and soap. Seek medical attention if discomfort persists. Wash clothes before re-use.
- Inhalation:** Move exposed person to fresh air. If not breathing or if breathing is irregular or if respiratory arrest occurs, provide oxygen by trained personnel. Maintain an open airway and loosen tight clothing. Get medical attention if symptoms occur.
- Ingestion:** Wash out mouth with water and remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop water intake if the exposed person feels sick, as vomiting may be dangerous. Vomiting should not be induced unless directed by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Place in recovery position and seek medical attention immediately. Maintain an open airway and loosen tight clothing.
- Symptoms and effects:** Exposure may cause acute irritation to skin, eyes and/or respiratory tract. Prolonged exposure may cause headaches, dizziness and/or loss of co-ordination.
- Protection of First-aiders:** No action should be taken involving any personal risk or without suitable training.
- Notes to Physician:** No specific treatment. Treat symptomatically. Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 5. FIRE FIGHTING MEASURES

- Flammability:** Oil residue is combustible as hydrocarbons are present.

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|--|---|
| <b>Extinguishing Media:</b>              | <p><b>Large Fires:</b> Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire but may be used to cool exposed tank/container walls.</p> <p><b>Small Fires:</b> dry chemical, fire fighting foam, CO<sub>2</sub> or other gaseous agents suitable for a class B fire.</p>                |
| <b>Special Exposure Hazards:</b>         | Risk of explosion due to increased pressure if product containers or tanks become heated due to fire. Promptly isolate the scene if there is any incidence of fire.   |
| <b>Hazardous Products of Combustion:</b> | Carbon dioxide, carbon monoxide, non-combusted hydrocarbons (smoke).  |
| <b>Protective Clothing:</b>              | Appropriate protective equipment and self-contained breathing apparatus (SCBA) for both organic vapours and aerosols should be worn.  |
| <b>Special Fire Fighting Procedures:</b> | <p>Sealed containers that are exposed to fire should be cooled with water.</p> <p>Do not use direct water jets on the burning products as this may cause steam explosions and the spread of the fire.</p> <p>Simultaneous use of foam and water on the same surface is to be avoided as water may destroy the foam.</p> |

## 6. ACCIDENTAL RELEASE MEASURES

|                                   |  |
|-----------------------------------|--|
| <b>Personal Precautions:</b>      | Operators should use full PPE (Refer to Section 8). No action shall be taken involving any personal risk or without suitable training. Exposed area to be evacuated immediately and adequate ventilation to be provided. Remove ignition sources and isolate exposed area as sealed containers may be prone to pressurised explosions.   |
| <b>Environmental Precautions:</b> | Shut off leaks if possible. Prevent run-off entry into sewers, water courses, soil, basements or confined areas. Ensure run-off is dealt with appropriately, according to approved environmental management plans. All material should be stored in drums on a hard surface to avoid contamination with soil. Disposal of contaminated materials as per Section 13.  |
| <b>Clean-up Methods:</b>          | Personnel cleaning up material should wear appropriate PPE (goggles, breathing apparatus, gloves and boots). Once source of leak is detected and controlled, the flow of oil must be controlled to avoid further contamination of soil and waterways. Inert absorbent material should be used to soak up oil spills. The material should be placed in a designated, labelled waste area on a hard concreted surface and disposed of as hazardous waste: see Section 1 for emergency contact information and Section 13 for waste disposal. |

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### Secondary Disaster Prevention:

Place floating booms on affected waterways downstream of spill.

Create temporary containment areas using earth or other available material.

## 7. HANDLING AND STORAGE

### Safe Handling:

Wear PPE to avoid contact with skin, eyes and respiratory tract. Wash face, hands and forearms thoroughly after handling. Keep clear from sources of ignition. Ensure electrical continuity of all relevant equipment by proper bonding as electrostatic charges can potentially be generated during pumping and tank-filling operations. Recycle all waste where possible.

### Safe Storage:

Storage conditions should comply with SANS Code 10131:2004 (above-ground storage tanks for petroleum products) and SANS Code 10089:2003 (storage and distribution of petroleum products in above-ground bulk installations), or other applicable international standard. If stored in storage tanks, tank should not be entered without breathing apparatus unless the tank has been well ventilated and gas checked. Ensure that all local and international regulations involving storage and handling facilities are followed at all times. Store away from ignition sources. Use appropriate, labelled containers intended for this material. Synthetic materials such as plastics and fibreglass may be unsuitable for containers or container linings depending on the intended use and the material specifications.

### Packaging and Transport:

Conventional liquid bulk handling techniques should be used when packaging and transporting the materials. Packaging and transportation procedures should comply with SANS Code 10229:2010 (Transport of dangerous goods - Packaging and large packaging for road and rail transport) and SANS Code 10228:2006 (The Identification and Classification of Dangerous Goods for Transport) respectively, or other applicable international standard.

## 8. EXPOSURE CONTROL / PERSONAL PROTECTION

### Biological Limits:

No biological limit determined.

### Control Measures:

The type of controls and the level of personal protection will vary depending on exposure conditions. Control measures must be selected based on a risk assessment of local circumstances. Sealed systems should be used as far as possible. Use local, intrinsically safe exhaust ventilation if there is a risk of inhalation of vapours, aerosols or mist.

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**Personal Protective Equipment (PPE):**

**Eyes:** Safety eyewear with side protection to avoid splashes.

**Hands:** Oil resistant protective gloves (nitrile rubber gloves).

**Respiratory Protection:** Wear suitable respiratory equipment where ventilation is insufficient.

**Skin and Body:** Wear protective overalls and chemical resistant shoes or boots.

**General Precautions:** Clean protective equipment should be used daily. Workers should be provided with shower facilities and should wash their hands before eating or drinking. Overalls and other protective clothing should be laundered at regular intervals and not be taken home.

**Permissible Concentrations:** The Occupational Exposure Limits (OELs) are represented in the table below:

| Ingredient Name                      | CAS-No   | Source        | Type                                 | Value                                    | Notes  |
|--------------------------------------|--|---------------|--------------------------------------|--|--|
| Residual Fuel Oil (mineral oil mist) | 68476-33-5   | ACGIH<br>OSHA | TLV <sup>1</sup><br>PEL <sup>2</sup> | 5mg/m <sup>3</sup><br>5mg/m <sup>3</sup> | Data from USA legislation (OSHA) as no limits defined in South African OHSA. |
| <sup>1</sup> TLV                     | Threshold Limit Value  |               |                                      |  |  |
| <sup>2</sup> PEL                     | Permissible Exposure Limit   |               |                                      |  |  |
| <b>NOTE*</b>                         | <b>Limits are shown for guidance only. Applicable regulations must be followed at all times.</b> |               |                                      |  |  |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Brown to black viscous liquid

**Size:** Not applicable

**Odour:** Hydrocarbon odour

**pH:** Not applicable (oil only)

**Density:** At 20 °C: 0.96 . 1.02 kg/l (ASTM D-445)

**Boiling Point:** >150 °C

**Flash Point:** >38 °C at 101,325 kPa

**Melting Point:** Not applicable

**Solubility in Water:** Very low solubility in water

**Flammability:** Upper limit: 5% (V/V) Max.

**Lower limit:** 0.5% (V/V) Min.

**Auto Flammability:** >250 °C

**Exposure Properties:** Not known

**Oxidising Properties:** Not applicable

**Vapour Pressure:** <0.1kPa at 40°C

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|                                     |  |
|-------------------------------------|--|
| <b>Incompatibility:</b>             | Ignition sources, oxidising agents, high temperatures, sulphuric acid, nitric acid, caustics, aliphatic amines and amides. |
| <b>Viscosity:</b>                   | 90-380 mm <sup>2</sup> @ 50°C  |
| <b>Water Partition Coefficient:</b> | Not applicable   |

### 10. STABILITY AND REACTIVITY

|  |   |
|--|---|
| <b>Reactivity:</b>                         | Not reactive <sup>1</sup>   |
| <b>Chemical Stability:</b>                 | Stable. Partially volatile at temperatures in excess of 70 °C   |
| <b>Possibility of Hazardous Reactions:</b> | Hazardous polymerization does not occur.  |
| <b>Conditions to avoid:</b>                | During storage and handling avoid excess heat generation, sparks and flames.  |
| <b>Incompatible material:</b>              | Strong oxidising agents, sulphuric acid, nitric acid, caustics, aliphatic amines and amides.  |
| <b>Hazardous decomposition products:</b>   | Burning of this product gives rise to a complex mixture of gases and airborne particles including metallic oxides, sulphur oxides and oxides of carbon. |

<sup>1</sup> Under normal ambient and anticipated storage and handling conditions in respect of temperature and pressure.

### 11. TOXICOLOGICAL INFORMATION

|  |   |
|--|---|
| <b>Basis of Assessment:</b>            | Based on tests of similar products and/or components.   |
| <b>Acute Oral Toxicity:</b>            | Low: LD50 in rats > 5000 mg/kg.   |
| <b>Acute Dermal Toxicity:</b>          | Low: LD50 in rabbits > 2000 mg/kg.  |
| <b>Acute Inhalation Toxicity:</b>      | Low: LD50 in rats > 5mg/l (practically non-toxic).  |
| <b>Skin Corrosion/ Irritation:</b>     | Moderate: Primary Irritation index 3.5 (rabbits).<br>Prolonged or repeated contact with skin may cause severe irritation and burns. |
| <b>Eye damage/ irritation:</b>         | Moderate irritation. Contact with eyes may cause blurring, tearing and redness.   |
| <b>Respiratory/Skin Sensitisation:</b> | Not known to be a sensitiser.   |

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| <b>Reproductive Cell Mutagenicity:</b>                     | Mutagenic due to presence of polycyclic aromatic compounds.   |
| <b>Carcinogenicity:</b>                                    | Probable carcinogen; avoid repeated and prolonged inhalation of fumes and mist.   |
| <b>Reproductive Toxicity:</b>                              | Repeated application to rats - Males (70 days); Females (14 days). Males: no adverse effects on mating/fertility were found. Females: no adverse effects on gonadal function, oestrous cycles or mating were found. |
| <b>Specific Target Organ Toxicity – Single Exposure:</b>   | Not expected to be a hazard.  |
| <b>Specific Target Organ Toxicity – Repeated Exposure:</b> | May cause damage to organs or organ systems (Liver, Thymus, Blood).   |
| <b>Aspiration Hazard:</b>                                  | Not considered an aspiration hazard.  |

## 12. ECOLOGICAL INFORMATION

|                                       |   |
|---------------------------------------|---|
| <b>Eco Toxicity:</b>                  | Has acute toxicity to aquatic organisms (LL50: 10 - 100 mg/l), (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).   |
| <b>Mobility:</b>                      | <b>Water:</b> May float or sink in water. Contains volatile components. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day.<br><b>Soil:</b> Limited mobility in soil; large quantities may penetrate soil and contaminate groundwater. |
| <b>Persistence and Degradability:</b> | Major components are inherently biodegradable. Persists under anaerobic conditions. The volatile components oxidise rapidly by photochemical reactions in air.  |
| <b>Bio-accumulation Potential:</b>    | Contains components which may have the potential to bio-accumulate. May cause tainting of fish and shellfish.   |
| <b>Other Effects:</b>                 | Films formed on water may inhibit oxygen transfer and cause damage to aquatic organisms.  |

## 13. DISPOSAL CONSIDERATIONS

|                        |  |
|------------------------|--|
| <b>Waste Disposal:</b> | Recover and/or recycle if possible. The waste generator should determine the toxicity and physical properties of the waste material to ascertain the appropriate waste classification and acceptable |
|------------------------|--|



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recycling, recovery or disposal method; in compliance with applicable regulations.

Disposal of waste that cannot be recycled or recovered should be undertaken by a licensed waste contractor in accordance with relevant laws and regulations. Safe disposal certificates should be obtained.

Avoid dispersal of spilled material, run-off, and contact with soil, waterways, drains and sewers.

### 14. TRANSPORT INFORMATION

|                               |   |
|-------------------------------|---|
| <b>Regulatory Information</b> | RESIDUAL FUEL OIL   |
| <b>UN Number</b>              | 1268  |
| <b>Shipping Name:</b>         | Petroleum Products or Distillates not otherwise specified |
| <b>Class:</b>                 | 3   |
| <b>Marine Pollutant:</b>      | Yes   |
| <b>Packaging Group:</b>       | III   |
| <b>Labelling Number:</b>      | 3   |

### 15. REGULATORY INFORMATION

|                                 |   |
|---------------------------------|---|
| <b>Poisons Schedule Number:</b> | Not applicable  |
| <b>Storage and Handling:</b>    | South African Occupational Health and Safety (Act 85 of 1993) as amended.<br>SANS 10131:2004<br>SANS 10089-1:2008<br>SANS 10089-2:2007<br>National Environmental Management Act 1998 Section 28 |
| <b>Use:</b>                     | National Environmental Management Air Quality Act of 2004, No. 893  |
| <b>Disposal:</b>                | NEM: Waste Act 2008: GNR 635 National Norms & Standards for Assessment of Waste for Landfill Disposal and GNR 634 Waste Classification and Management Regulations                               |
| <b>Transport:</b>               | South African National Road Traffic Act: GNR 273<br>SANS 10228:2006 - The Identification and Classification of Dangerous  |

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Goods for Transport.

SANS 10234:2007 . Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

**Occupational:**

Occupational Health and Safety Act (1993).

Hazardous Chemical Substances Regulations, 1995.

Occupational Exposure Limits . Recommended Limits (South Africa, 1995)

**SDS Content:**

Occupational Health and Safety Act (1993), General Amendment Regulation 930, June 2003.

Occupational Health and Safety Act (1993), Hazardous Chemical Substances Regulation 1179, August 1995.

SANS 10234, 2007: Global Harmonized System of Classification and Labelling of Chemicals (GHS). Standards South Africa, Edition 1.

### 16. OTHER INFORMATION

**Reason for update:**

To conform to SANS 10234:2007 and the Occupational Health and Safety Act (GNR930)

**Date of Issue:**

9 January 2014

**Next Review:**

8 January 2017

**Revision:**

10

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